AIR FORCE

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THIS IS AFA

The Air Force Association is an independent non-military, airpower organization with no personal, political or commercial axes to grind; established and incorporated as a non-profit corporation February 4, 1946.

Active Members are men and women honorably discharged from military service who have been assigned or attached to the US Air Force or its predecessor services, or who are currently enrolled in the Air Force Reserve or Air National Guard. **Service Members** (non-voting, non-office holding) are men and women currently assigned or attached to the US Air Force. **Associates** (non-voting, non-office holding) are men and women not eligible for Active or Service Membership who have demonstrated an interest in furthering AFA's aims and purposes, or in proper development and maintenance of US airpower.

ITS OBJECTIVES

To preserve and foster the spirit of fellowship among former and present members of the Air Force.

To assist in obtaining and maintaining adequate airpower for national security and world peace.

To keep AFA members and the public at large abreast of developments in the field of aviation.

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THE COVER

Typifying the fighter pilots who are giving the Reds a bad time over Korea is Second Lieutenant Edwin F. Tabaczynski, Mishawaka, Indiana, who has at this writing fourteen combat missions under his belt. He flies a F-80 in the 51st Fighter Interceptor Wing and while our story is primarily about the F-86 vs the MIG the picture was too good to pass up on a technicality.

READ "WHY OUR PILOTS ARE OUTFLYING THE REDS" PAGE 24

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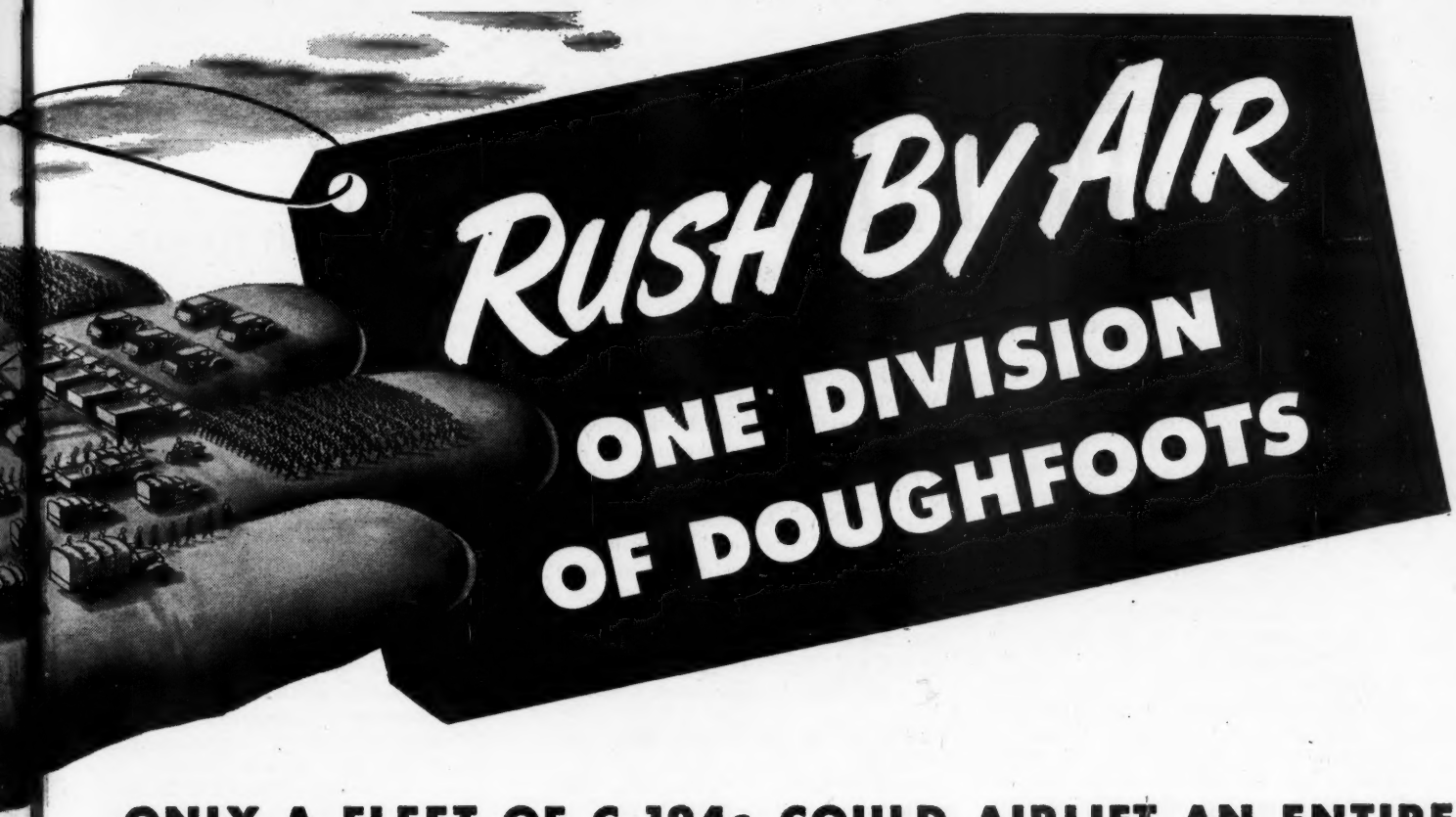
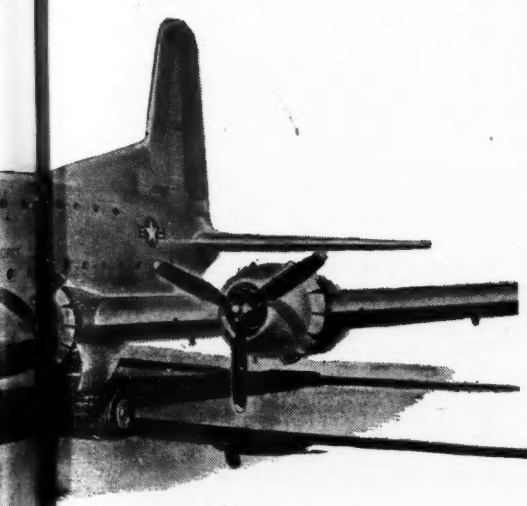
DOUGLAS GLOBEMASTER II



ONLY A FLEET OF C-124s COULD AIRLIFT AN ENTIRE INFANTRY DIVISION AND ALL ITS EQUIPMENT



Quickly the giant Globemaster II brakes to a stop. Its clamshell doors fold back. Down comes the self-contained ramp. And seconds later battle-ready troops are pouring out of her monstrous belly. Nearby other C-124s unload such divisional equipment as M-24 tanks, 155 mm. Long Toms, bulldozers, trucks and scrapers.

A fleet of these new Douglas transports could airlift all the personnel and equipment of an entire 16,000-man airborne division from Boston, Mass., to Brest, France, *in a single flight!*

Designed to meet the vital need for aircraft to support global operations, the C-124 has been ordered in quantity by the armed forces. Already a certain number are in active service.

Over five years of careful planning and development work by Douglas and the military have made possible this revolutionary airplane. Such pioneering is typical of Douglas engineers, who are today turning their attention to advance-type combat planes with jet, rocket and turbo-prop propulsion. Douglas Aircraft Company, Inc.

Skilled engineers and technicians find Douglas a good place to work!

Depend on **DOUGLAS**

WORLD'S LARGEST BUILDER OF AIRCRAFT FOR 30 YEARS ➤ MILITARY AND COMMERCIAL TRANSPORTS
FIGHTERS ➤ ATTACK PLANES ➤ BOMBERS ➤ GUIDED MISSILES ➤ ELECTRONIC EQUIPMENT ➤ RESEARCH

AIR MAIL

Correction

Gentlemen: Just a note concerning an item on page 74 of the AIR FORCE Magazine of October. Under "Decelerator Testing" there is reference to "Maj. John Paul Staff, an aero-medical technician." The gentleman illustrated is Maj. John Paul Stapp who is not a technician but a medical officer of the AF Medical Service who has risked his life repeatedly in the studies described.

Maj. Gen. Harry G. Armstrong, USAF (MC)
The Surgeon General
Department of the Air Force
Washington 25, D.C.

● *Our apologies to Major Stapp and General Armstrong. We merely copied the information on the back of the photo. For more on Major Stapp and the research into high-altitude bailouts see "Blowing Your Top at 50,000 Feet." page 37.*

SAC Booster

Gentlemen: Very sorry I had to take so long to renew my membership and subscription to AIR FORCE Magazine. However, I wouldn't be without AIR FORCE for anything. I stopped all other magazine subscriptions.

How about some articles concerning SAC (Heavy Bomber outfits), and Photo Recon outfits (like 111th Wing Strategic Recon. Bomb (M) Photo)? Please publish some more articles about the enemy (Communist) Air Force.

Sgt. Ed Woodmansee
Fairchild AFB, Wash.

AFA Medals

Gentlemen: Request that this unit be furnished with two AFA Medals at your earliest convenience. The reason for this unusual request for two medals is due to the fact that we have made up a display board showing all of the awards and decorations that an AROTC cadet may be awarded during his career in the program.

You will be pleased to know that this unit has placed the AFA Medal in the number one spot, having precedence over all other awards. This medal is a definite morale builder and is the most coveted award we have.

The winner of the medal at this University for the 1950-51 school year was Cadet Lt. Col. William E. Smurro, the cadet wing commander, and the recipient of a Regular Air Force commission.

The AFA is to be commended on the outstanding job they are doing for the Air Force in general and the AF ROTC program in particular.

Lt. Col. Francis J. Pope, PAS&T
Loyola Univ. of Los Angeles

Reserves Again

Gentlemen: When AIR FORCE Magazine starts functioning as a sounding board for all disgruntled reservists (issue of August 1951, Airmail), who were called up, its original strong and bold boast to be an advocate and spokesman for airpower free and simple with no axe to grind or strings attached stands in jeopardy of failure by default.

Leave the gripes and complaints to grievance committees, compassionate boards, soap-box orators and veterans organizations and continue to give us facts and not fiction.

Capt. Warren D. Jackson, USAFR
APO 953, San Francisco, Calif.

Gentlemen: In your August issue you published a letter from "S.S.D.," Mitchel AFB, N. Y., which made obvious reference to the 514th Troop Carrier Wing, Medium, stationed at this base. "S.S.D." is certainly entitled to gripe but we feel he is being unfair to the hard-working airmen and officers who make up this unit.

In his letter, the writer pointed out that the wing is "made up 99 percent of reservists without any training in about five years." The first half of this statement is true. We are made up of reservists who have made great personal sacrifices to return to the Air Force. But, many of these men had been meeting since as far back as 1947, and many were part of the Reserve program serving without pay. On May 1, 1951, when the unit was activated, every first pilot was fully qualified to fly the C-46 type aircraft, and we would have been able to man every available aircraft had we been called upon to do so. This certainly indicated not only an organized training program, but also perseverance and responsibility on the part of members of the wing.

From an administrative standpoint, a certain amount of difficulty was encountered during the first month of operation. This was largely due to the rapid expansion of the Air Force from 48 to 95 groups in a matter of a few months. Subsequent supply shortages were Air Force wide. Higher headquarters was quite aware of this shortage and the situation has largely been remedied by now. Typewriters, desks, office supplies, and Air Force Regulations were all difficult to obtain, and the short supply of these items worked temporary inconveniences on all concerned. Cooperation on all levels eased the situation.

In his letter, "S.S.D." complained about the preparation of a list of officers' wives for a social function. The entry of a man into active military service vitally affects his wife and family. We felt that the wives should get acquainted as soon as possible so that they could be integrated into the Air Force family. From a practical standpoint, the only step necessary for orderly room personnel was to indicate on the unit's officers roster which of the men were married. This job was not unreasonably difficult or time consuming.

There have been difficulties in the activation of the 514th Troop Carrier Wing. Every officer and airman has had personal inconveniences but the men have responded in an excellent manner. Wholehearted cooperation has produced an outfit which does not have to take second place to any AF unit.

Capt. Clifford B. Mandell
Mitchel AFB, New York

Gentlemen: I wish that it were possible to reach each and every Air Force Reservist with the boldly outlined letter from S/Sgt. Frank J. Stieber (AIR FORCE, Aug. 1951). What must happen to this nation of ours to wake up the minds of most reservists to the importance of preparedness? Self-pity, indifference and complete lack of interest in our nation's present emergency seem to be the most serious problems facing the Reserve program. I find it increasingly difficult in my recruiting attempts to get beyond the personal greed and utter lack of national fervor in the minds of potential volunteer personnel.

"What's the pay?", "How soon can I get promoted?", "Will I be recalled?" seem to be the major questions fired by a prospective member. Never the questions—"Does my country need me?", "Is our way of life threatened?", or "Will my kids have to go to war some day as I did?". Oh no, not in your life! "What's in it for me?"—that's the only concern.

What will it take to bring S/Sgt. Stieber's convictions home to the many others who sit and let the guy next door take over for them. Orchids to S/Sgt. Stieber. The Air Force will always be on top with men like him at the helm.

Gerald W. Vath
Reading, Pa.

We Think So, Too

Gentlemen: Was there an Army Regulation or is there an Air Force Regulation which prohibits the naming of an Air Force Base after an enlisted man who fought and died for his country?

Surely, there must be some worthy of that honor.

Earl K. Monroe
Oakland, Calif.

Lockheed

EXPERTS ENACT VITAL FIELD SERVICE ROLE

Its far-reaching Field Service Department is another example of Lockheed leadership in action. Over 80 highly skilled technicians maintain constant vigil throughout the world, helping guarantee dependable performance of Lockheed airplanes.

On Korea's battlefields, in the Arctic, at desert bases—everywhere—Lockheed Field Service Representatives are on hand to advise, instruct and assist the men who fly as well as those who service Lockheed aircraft.

Equally important, and even more vital to the future of aviation, is the research function of Lockheed's Field Service. Day in and day out, records are kept and reports are filed, evaluating military and commercial planes, checking performance under every operating condition . . . building up a tremendous library of flying and functional data which help in designing even greater aircraft for the future.

Commercial service as well as military

This same continual assistance is given the operators of Lockheed commercial airplanes—the 15 leading world airlines that daily fly Constellations over every continent and every ocean. The intelligence thus gathered is made available to all Constellation operators, further assuring Lockheed dependability.

One of many examples of valuable assistance in the field occurred recently when the British Overseas Airways Corporation suffered serious damage to its base in Filton, England. A Lockheed Field Service Representative conferred with BOAC officials, checking damage to aircraft, loss of spare parts, and destroyed facilities. Then a message to Lockheed's well-stocked U.S. warehouse speeded necessary parts to Filton immediately and restored full operation far sooner than BOAC thought possible.

This world-wide service is well worth its million-dollar annual cost . . . permits lifetime follow-through on each airplane produced . . . backs Lockheed's reputation for dependability based on experience.

AIR MAIL

Anniverary Issue

Gentlemen: Congratulations on your birthday issue of AIR FORCE Magazine. It's the greatest publication effort that I have seen in a long time and I certainly enjoyed it a lot.

Many thanks.

Robert K. Black
Pittsburgh, Pa.

Gentlemen: We use the articles in AIR FORCE extensively in the preparation of our AF ROTC courses. We wish to express our appreciation for the help your magazine has been to us, and for the valuable contributions AIR FORCE has made in acquainting the public with air power.

Maj. James C. Finlayson, Adjutant
Det #15, Hq & Hq Sq, 1st A F
Syracuse University, N. Y.

Gentlemen: As a long time member of the Association I feel I should have written a long time ago to tell you how much I enjoy your fine magazine. I have enjoyed your magazine for many years and believe the Association is doing a fine job.

Maj. Thomas M. Slamal, Commanding
6th Motor Veh. Sq., 509th Air Base Gp.
Walker AFB, Roswell, New Mexico

Gentlemen: May I congratulate you on the excellent photographic presentation of Command and Staff, USAF, in the September issue of AIR FORCE.

Col. W. L. Tubbs
Ass't. for Ground Safety
Dept. of the Air Force, Hq. USAF
Wash., D.C.

Gentlemen: Your outstanding chart of the USAF Command and Staff Officers is another fine example of Air Force Association work.

Plans are being formulated to have reprints framed for the Personal Affairs office at this base so that personnel processing through for shipment may have a chance to see what the "old man" looks like.

Congratulations to your very fine organization.

1st Lt. Bruce L. Mitchell
Base Personal Affairs Officer
Mather AFB, Calif.

Gentlemen: At your convenience please send me copies of the USAF Base Map and background material together with copies of the AIR FORCE Magazine chart published in the September issue of AIR FORCE Magazine, the finest issue yet published.

S/Sgt. Michael D. Griffin
Hq., Continental Air Command
Mitchel AFB, N.Y.

Gentlemen: I wish to take this opportunity of thanking you for the very fine article, written by Mr. J. C. Culpepper of your staff, which publicized in the anniversary issue of AIR FORCE the need for civilians to work in shortage occupations throughout USAF.

I am glad to tell you that already the Air Force has received many employment inquiries which are directly attributable to this article. As you no doubt know, copies of the magazine are being transmitted to the Air Commands and their bases; they will provide commanding officers and their civilian employees with much useful Air Force orientation material.

It is very gratifying to know that the Air Force may continue to avail itself of the good services of the Air Force Association, particularly in the columns of AIR FORCE. We shall continue to supply your periodical with items of interest to your readers.

Jack Pockrass
Chief, Placement & Employee Relations Division
Office, Director of Civilian Personnel
The Pentagon
Washington 25, D.C.

Gentlemen: It will be greatly appreciated if you will supply the USAF Historical Division, Research Studies Institute, with copies of the chart, The United States Air Force (AIR FORCE, September 1951) and of the Air Force Base Map and background material when the latter are available. As you may know, the USAF Historical Division supplied AIR FORCE with much of the data concerning the naming of Air Force Bases.

Congratulations on a superb issue of AIR FORCE.

Joseph W. Angell, Jr.
Ass't. to the Chief
USAF Historical Division
Air University
Maxwell AFB, Alabama

Gentlemen: I should like to acknowledge receipt of reprints of outstanding articles printed in your AIR FORCE Magazine. I refer specifically to three articles describing the location of major active AFBs in the US, the USAF Command and Staff, and the historical highlights on bases of the AF.

It is our plan to use much of this material in the presentation of our Air ROTC curriculum. May I offer my sincere thanks for your speed in acknowledging our request and commend you on the excellence of the articles. We have had nothing but praise from those who have already seen the material, and anticipate an easier teaching situation, as well as the best student learning, through the use of these reprints.

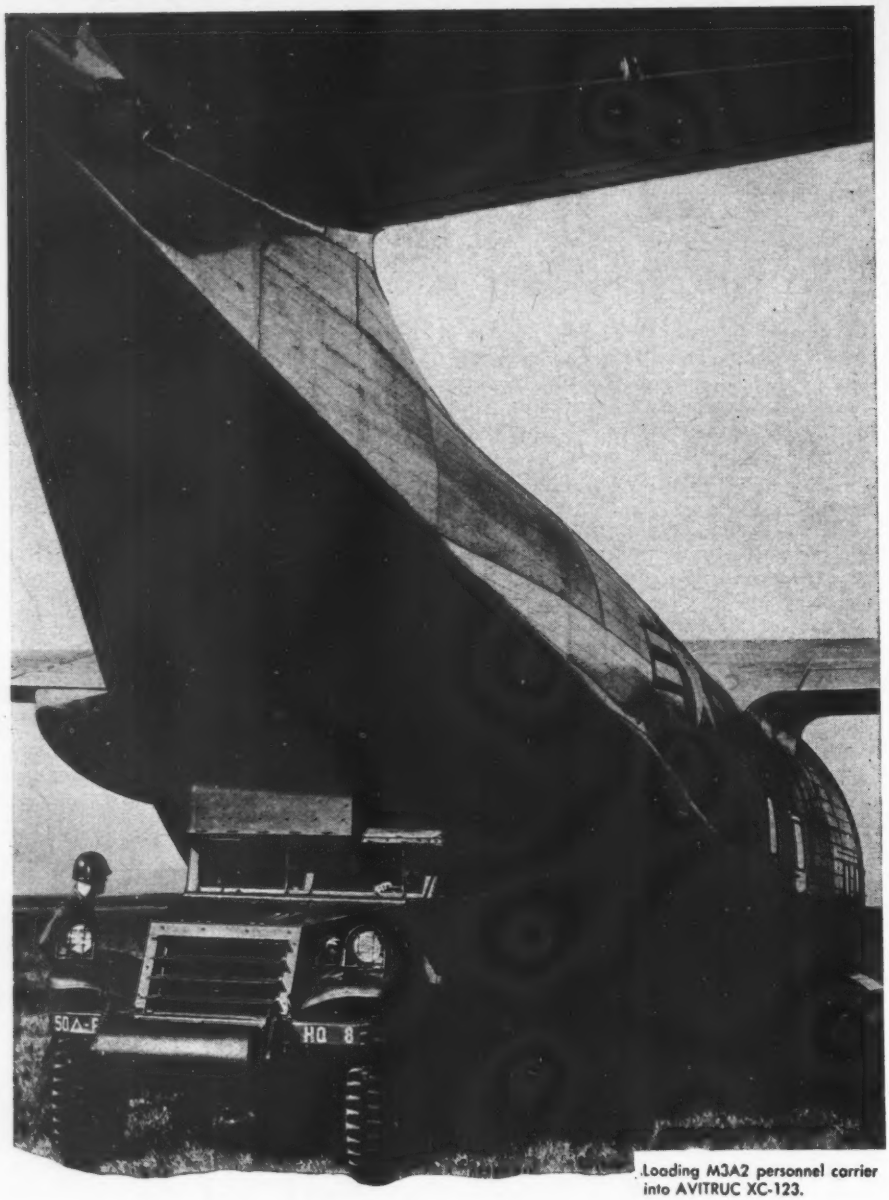
Lt. Col. Joseph P. Marsiglia
Assistant PAST, AFROTC
New York University, N.Y.

Air-Ground Operation

Gentlemen: This is the first chance I have had to comment on your excellent issue on "The Air-Ground Operation in Korea," which has drawn such deserved attention. It was a fine, simple presentation of a highly complex subject.

I have just completed a tour of a hundred missions in the old F-51, flying about one-third of those hundred missions

(Continued on page 10)



Loading M3A2 personnel carrier into AVITRUC XC-123.

UTILITY

Whether crated vehicles or a huge half-track personnel carrier; hay for marooned livestock or litters for evacuation of wounded; transport of replacement troops to forward areas or paratroops to jump areas—. loading and unloading will be simple—safe, speedy delivery assured.

Chase AIRCRAFT CO., Inc.
WEST TRENTON, NEW JERSEY
STROUKOFF AVITRUC

AIR MAIL CONTINUED

in close support of the ground forces of the UN. My squadron has been in action since July 8, and, along with the other Mustang outfits, has done a lot more damage than one would be led to believe possible, judging by the proportionate publicity given the conventional and the jet groups in Korea. It is my firm belief that the Air Force is making a tremendous mistake in putting such heavy emphasis on the jet fighter as its primary close support airplane.

Now don't think I'm calling the F-51 and the F4U the answer. I still get the willies when I think of dragging a Mustang down a valley lined with various small-arms category weapons, when that coolant radiator seemed about 10 feet square. But we were carrying two napalm tanks and six rockets, plus the full load of ammo for the six .50 caliber guns, flying off PSP strips as short as 3,200 feet, and staying in the air three hours or more. The Corsair pilots were doing the same thing with heavier loads. We ran low recon on roads all over Korea, and we got the hell shot out of us. The jets flew more close support and little or no recce work, and if not on close support were hitting on prebriefed, well-defined objectives.

This is not just the complaint of a jet pilot flying Mustangs. I'm deeply interested in our having the right equipment for the big war we seem to be heading for, and I don't think the jets are the answer. The AF has got to do more in the way of close support for the ground troops than throwing an almost impotent flight of lightly loaded airplanes in, a flight which all too often is screaming, "Get us a target quick, we've got five minutes target time for you." Hell, it takes five minutes to get your target marked and identified! And I speak from experience. Too many times I've had to pull up off a target while some jet flight salvoed its load in order to roar back up to 3,500 in order to make it home. They drop, and leap off, and then the Mustangs and Corsairs come back in and clean up behind them.

I would be grateful for some comment from your editors on this business. Believe me, I'm speaking for most of the conventional airplane drivers here when I suggest such heresy as building another propeller-driven fighter plane.

AF Lieutenant

Department of Amplification

Gentlemen: In looking over the September issue of AIR FORCE Magazine, we found, on page 13, reference to Parks AFB with a designation of "ATC" indoctrination center. Thought you would like to know that the Air Training Command bases are designated "ATRC."

Maj. Anthony V. Ragusin
Chief, Air Information Division, PIO
Scott AFB, Ill.

Gentlemen: This is with reference to a story in the September 1951 issue of AIR FORCE Magazine, entitled "Air Force Schools."

(Continued on page 64)

AIRPOWER IN THE NEWS

VOL. 34, NO. 11 WASHINGTON, D. C. NOVEMBER, 1951

HIGH COST of airplanes today as compared with WW II, in the opinion of Lockheed Pres. Bob Gross, is result of three factors: normal cost of manufacturing --materials, labor, machinery--has increased greatly since 1941; today's military airplane is many times more complicated than its predecessors in design, construction, and content; and because aircraft industry was virtually shut down from 1945-47, country must now pay high cost to regain momentum. . . Since late in WW II, 53 different types of jet planes, including four with rocket engines, have been developed in US. Additional advanced types are now in design and development stage. Today, US has eight types of jet fighters and five jet bombers in production. Jet pods have been added to USAF intercontinental bomber, increasing its performance. One eight-jet bomber, a flying wing configuration, has been tested; and two new eight-jet long-range bombers are scheduled to fly late this year. Production orders already have been placed on one of these aircraft. Only one nation--Soviet-Russia--has produced greater numbers of jets.

SHORTAGES of machine tools, materials, and critical components have caused aircraft production to fall below schedules set by military planners, according to Adm. DeWitt C. Ramsey, AIA president, who has stated that jet engine production is six months behind schedule. . . Army and Navy contractors and subcontractors have been invited by USAF to make site selections of machine tools remaining in its machine tools storage depots at Marietta, Ga., and Omaha, Neb., beginning October 29. AF and Atomic Energy Commission contractors already have drawn upon the depots. . . AF won't supply jet fighters to Air National Guard units yet to be mobilized until the production picture has brightened.

CENTRAL MILITARY PROCUREMENT OFFICE goes right back where it started from. Moved from Pentagon to Old Post Office building in Washington last April, as convenience to visiting business men, CMPO found they still wanted to go to Pentagon anyhow and preferred getting procurement information at location closer to service information services. New location is Room 3D-758, Pentagon; phone number remains the same, LIberty 5-6700, extension 66151. . . Denver industrial area manufacturers who wish to enter military production as subcontractors will be able to examine items they might produce at Armed Forces Subcontractors Exhibit November 13 to 15.

FIFTH AIR TRANSPORTATION INSTITUTE will be held in Washington, D. C., from October 30 to November 16, 1951. It will be conducted by The American University, with cooperation of CAA, Director of Transportation, USAF, and Air Transport Association.

HUMANITARIAN PROJECT sponsored annually by Scott AFB chaplains netted about $3,500 this year. Money will be used to purchase Christmas gifts for permanently hospitalized AF combat veterans. . . Bell Aircraft Corp. has been selected to receive 1951 National American Legion Award "for having most outstanding record for employment of physically-handicapped vets" of any employer in New York State. . . Henceforth, holders of Congressional Medal of Honor or Distinguished Service Cross will pay nothing for room accommodations at Los Angeles' Hotel Hayward.

LUBRICATING-OIL recovered and processed by AF during fiscal '51 totaled over 1,500,000 gallons, yielding 1,115,000 gallons of re-refined oil as well as

Continued on page 14

a substantial financial savings. AF estimates that for every 1,000 gallons of new oil issued, 250 gallons of used oil will be accumulated, 177 gallons of re-refined oil will be recovered; plans now include re-refining of used oil from ground equipment.

USAF will lease Laredo, Tex., Airport for use as jet training base. . . A research project to study high altitude winds over US at altitudes from 50,000 to 100,000 feet has been initiated by AF. Nicknamed "Moby Dick," project will use large plastic balloons to obtain important weather data from the stratosphere. (Thunderstorms and static electricity have caused ten accidents this year to MATS aircraft.). . . USAF's Special Weapons Command is participating in Atomic Energy Commission's test operations at the Nevada test site. . . Army ground liaison officers are now being assigned to fighter-bomber and tactical reconnaissance wings of TAC.

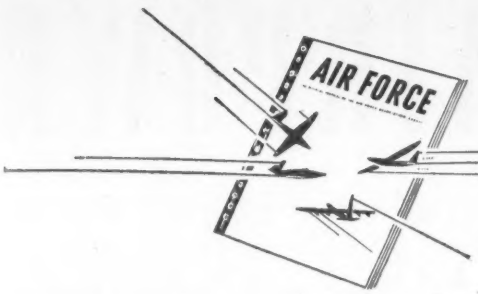
53,000 AF sorties were flown over Korea from June 21-Sept. 20, 1951. (During this three-month period, 59 USAF aircraft were lost to combat.). . . AFA member Capt. Jimmie M. Jernigan, SA-16 amphibian pilot of 3rd Air Rescue Squadron, recently completed his 118th rescue of Korean war when he landed his plane off a hostile Korean coast and picked up a Thunderjet pilot who had been shot down in battle with enemy MIG-15s. He is one of few 3rd ARS pilots who have flown both helicopters and amphibians in present war. . . "Bub," oldest B-29 in FEAF, is back in Sacramento for overhaul after 107 Korean missions in which 1,000 tons of bombs were dropped.

ROSWELL GILPATRIC, Ass't Sec'y of AF, will replace John A. McCone as Undersecretary. . . McCone resigned to resume chairmanship of Pacific Far East Line. . . AFA Director Gen. George C. Kenney, recently retired from AF, is co-chairman with Gene Tunney of 1951-52 national Arthritis and Rheumatism Foundation drive, which will seek to raise $3,500,000 for its program of research, clinics, and rehabilitation. . . Recent AF Command and Staff changes include: Lt. Gen. Laurence S. Kuter named as Deputy Chief of Staff, Personnel, USAF; Maj. Gen. Joseph Smith to replace Gen. Kuter as Commander, MATS; Gen. Smith to be replaced as Director of Plans by his deputy, Maj. Gen. Robert M. Lee; Maj. Gen. Eugene L. Eubank to command Technical Training AF formerly headed by Maj. Gen. Charles C. Chauncey who retired October 31; and Brig. Gen. E. Blair Garland assumed command of AACS from Brig. Gen. Wallace G. Smith, who is retiring.

AF ORGANIZATION ACT, recently enacted, changes terms United States Air Force Reserve and USAFR to Air Force Reserve and AFR, and term AFUS (Air Force of United States), used to refer to overall organization, to terms USAF and United States Air Force. As authorized by act, Maj. Gen. Reginald C. Harmon, AF Judge Advocate, was promoted to permanent major general; and Lt. Generals John K. Cannon, Curtis E. LeMay and Benjamin W. Childlaw received four-star rank.

COL. A. D. TUTTLE, 71, medical director of United Airlines from 1937 until his retirement last June and commandant of present AF School of Medicine from 1934 to 1937, died last month, was buried in Arlington Cemetery.

INTERNATIONAL training center for aerial survey--designed as a practical aid in discovery of undetected resources in underdeveloped areas of the world--will soon be in operation at Delft, the Netherlands. . . "International Language for Aviation" is presently being studied by Communications Division of International Civil Aviation Organization. Member nations of ICAO have agreed that English language should be basis of ILA.



RENDEZVOUS

Where the Gang gets together

LOOKING FOR SOMEONE? ANY ANNOUNCEMENTS TO MAKE? WRITE RENDEZVOUS AND RENDEZVOUS READERS WILL WRITE YOU.

CORPORAL SCOTT: The CO, Scott AFB, desires to obtain a biographical sketch and photograph of the late Cpl. Frank W. Scott for whom this base was named. Official records indicate that Scott was first enlisted man to lose his life in an aircraft accident when the plane in which he was a passenger crashed at College Park, Md., in 1912. Pilot of this plane was a Lt. L. G. Rockwell. Little other information is available. There are probably a number of your readers who remember this incident and may have known the persons involved. They could, no doubt, give us information which could help in providing a contact with Scott's survivors and may be able to furnish photographs we could use. If it conforms with your editorial policy, I would appreciate it if a small "squib" could be placed in your magazine asking that anyone with a knowledge of Cpl. Scott and the accident write the CO here. *1st Lt. Robert E. Johnson, Ass't PIO, 3310th Tech. Training Wing, Scott AFB, Ill.*

BACK ISSUES: Anyone interested in back issues of AIR FORCE Magazine dated from October 1946? Offers for one or more welcomed. *E. A. Rautio, 226 East Mountain St., Worcester 6, Mass.*

MORE BACK ISSUES: I need the following issues to complete my files to date: 1943—March and May; 1944—January and July; 1945—February; 1946—January and June; 1947—May. Write *William A. Dean,* AIR FORCE Magazine, *1424 K St., N. W., Washington 5, D. C.*

CALLING BERT: Would like to locate Bert Jenkins, T/Sgt., radio operator, 99th Bomb Group, Italy; POW, July 8, 1944, to May 1945, Germany. Last known to be working as a musician in the East. Please contact *Lt. Jack R. Olsen, Box 93, Holloman AFB, N. M.*

HEY, PAUL!: Can you help me learn the present whereabouts of (then) Maj. Paul Betzold, formerly operations officer of 752nd Bomb Sqdn., 458th Bomb Group of 96th Combat Wing, 8th AF, stationed at Horsham St. Faith near Norwich, England, from 1943 to 1945? *Jackson W. Granholm, 12620 74th Ave., S., Seattle 88, Wash.*

FILM COMMUNIQUE: Any old members of 86th Fighter-Bomber Group, 12th AF, who would like to have a copy of the motion picture film made in Sicily and North Africa can obtain a 16mm sound print by ordering FILM COMMUNIQUE No. 2 from Blackhawk Films Inc., Davenport, Iowa, for $12.95 plus 30 cents postage. The film is also rentable from some film libraries such as University of New Hampshire, University of Illinois, University of Indiana. Many officers and enlisted men from the 525th Squadron are easily recognizable such as: Dick Lister, Jim Thomas, John Jackson, Mert Guyer, Bert Liljeberg, John Sorenson, and Frank Vitopil. Members of other groups should look through other FILM COMMUNIQUES for motion pictures of their groups. *J. B. Watson, Jr., Director, Dartmouth College Films, 11 College St., Hanover, N. H.*

REUNION: Of 22nd Bomb Group, Saturday, Dec. 1, 12:30 p.m. at Zeta Psi frat house, 31 E. 39th St., New York City. Former members are coming from as far as Texas. Contact *Walter Gaylor, 367 Broad St., Newark 2, N. J.*

BOMBS AWAY: Just read Douglas M. Keeney's poem in your September issue. I first saw this written in longhand and on the news room wall at Stalag Luft III, Sagan, Germany in June, 1944, while I was there as a POW. Thought maybe Mr. Keeney might enjoy the bombardier poem, written by an unknown and also posted on the prison news room board.

(See adjoining column.)

UNIT HISTORIES

17TH RECON BOMB SQDN: I noticed that you were interested in unit history of the "Fighting 17th." The publication was called "Strike," and was printed in Australia by Jackson and O'Sullivan Printing, Ltd. The book was distributed to the squadron when it was stationed at Yokota Army Air Base in Japan. I have a copy of "Strike" in my possession and would be pleased to furnish additional information concerning it. The history covers the time from 1943 to 1944 in the Southwest Pacific area, *Allen W. Hoag, 105th So. Trumbull Ave., Chicago 43, Ill.*

81ST TROOP CARRIER SQDN: During WW II, I was a crew chief or aerial engineer with 81st Troop Carrier Sqdn., 436th Troop Carrier Group, and flew missions as such during European campaign. I have met some former members of the old 9th Troop Carrier Command since my return to regular status in USAF, but none from the old 81st. I have heard of group histories on 435th and 437th, but none from the 436th. Anyone knowing anything about the above mentioned history, please drop me a line. *T/Sgt. John B. Harris, Jr., AF 14159745, Hq. Sqdn., 39th Air Base Group, Box 178, APO 942, c/o Postmaster, Seattle, Wash.*

96TH BOMB GROUP: I am interested in obtaining information on a unit history of the 96th Bomb Group (Heavy), 8th AF (European Theater.) *John B. Connell, Jr., 137 E. 2nd St., Weston, W. Va.*

344TH BOMB GROUP: During WW II, I was a member of the 344th Bomb Group, Headquarters Section. What I would like to know is if a history of this Group was ever printed. It included the 494th, 495th, 496th, and 497th squad-

(Continued on page 59)

"The Last of the Bombardiers"

Down a lonely road on a
cold black night,
A miserable beggar
trudges into sight,
And the people whisper
over their beers—
There goes the last of the
bombardiers.
What is a bombardier?—
No reply,
But men grow silent and
women sigh,
As a deathlike silence
fills the place,
With the gaunt grey
ghost of a long lost race.

Furtive glances from ceiling to floor,
Till someone, or something opens the door,
The bravest of hearts turn
cold with fear,
For the thing in the door
was a bombardier.

His hands were bony and
his hair was thin,
His back was curved like
an old bent pin,
His eyes were two rings
of black,
And he vaguely mumbled
—Shack, shack, shack!

This ancient relic of the
second world war,
Crept across the room and
slouched on the bar,
And in hollow tones from
his sunken chest,
Demanded a drink and
only the best.
The people said nothing
but watched in the glass,
As the beggar produced
his bombardier's pass,
With the glass to his lips,
they heard him say,
Bomb bays open—
Bombs away!

Then speaking a word he
slouched thru the door,
And the last of the Bombardiers was seen no more,
But all thru the years that
phrase has stuck,
When you say "Bombardier"
you add—"Hard luck."

TOWARD AN AIRPOWER C

THE STRUGGLE for adequate airpower, as men like Billy Mitchell and Hap Arnold discovered some years ago, essentially is a struggle against tradition.

Mitchell introduced the nation to the military airplane and, in the process, to the vested interests who opposed its development; his was the fight for airpower recognition.

Arnold introduced a military air organization of global proportions and, in the heat of war, bulldozed into being the country's third military service; his was the fight for airpower parity.

General Vandenberg, having received the recognition by inheritance and the parity by law, seemed destined to have an easier time of it than his predecessors. Offsetting these advantages, however, was the scope of his task. For it became Vandenberg's lot to introduce the complete airpower package—a concept which would break away from the surface strategy of the past and would permit full exploitation of the air weapon.

Were they on hand today, both Mitchell and Arnold would recognize in another concept, that of the so-called "balanced forces," all of the traditional barriers which have curtailed airpower development over the years, and which today prevent over-all strategy patterned to the technical advancements and geographical advantages of aggressive communism.

The "balanced force" tradition, as a rationalization for maintaining surface forces out of proportion to their military usefulness, is a masterful over-simplification of the defense problem. As a superficial compromise to service differences, as a seemingly plausible solution in a maze of military complexities, it has gilt-edged political appeal.

In the tedious, frustrating struggle against the "balanced force" tradition there have been times when the situation seemed to call for both Mitchell the martyr and Arnold the bulldozer. General Vandenberg has been neither. He has chosen a velvet-gloved presentation of the hard facts of airpower to the men who hold the key to our military planning. That the glove has been effective is now quite apparent.

It is now an open secret that the Joint Chiefs have approved expansion of the Air Force to 140-odd groups and the leveling off of the strength of the Army and Navy. In so doing, they have given their blessing to an allocation of funds in the 1953 fiscal year which breaks up, for the first time, the "balanced force" tradition of equal appropriations, on an approximate dollar-for-dollar basis, for the three services.

Historically, this is a major step in the struggle for adequate airpower.

It is recognition that more and more of our leaders are catching up to the public in realizing that air is our priority medium for national security. It is a tribute to the individual leadership of Representative Carl Vinson and Senator Henry Cabot Lodge, Jr., who proposed equivalent Air Force expansion in advance of the action by the Joint Chiefs. It is also a tribute to the new stature of the Air Force establishment, abetted by the wisdom and integrity of Secretary Finletter. First and last, it is a tribute to General Vandenberg's ability to convince the Joint Chiefs that the dollar-for-dollar deadlock was not in the national interest.

At the same time, it should not be assumed that an Air Force of 140-odd groups some three years hence necessarily will be adequate in numbers or in striking power to provide the security required. Nor should it be assumed that this action within the inner sanctum of the military constitutes a basic shift in the positions of the other two services. On the contrary, both the Army and Navy maintain, as their official position at least, devotion to the same surface strategy on which they were founded a century and a half ago.

The action by the Joint Chiefs substantiates the fact that the logic of the Air Force position regarding priority tasks and strength requirements is now so clear as to be irrefutable around the conference table. (Even the diehard Navy League cushioned a recent impassioned plea for "more Navy" with the statement: "This is not to suggest that the Air Force should not be expanded as rapidly as possible and to a strength well beyond the 95 air groups now authorized.")

The logic, however, has been compromised by a host of problems. That the Air Force position has been solid since World War II is evidenced by the strategic bombing surveys and a host of impartial postwar studies. Yet, we have seen the military cling to surface thinking despite ample war

experience to the contrary, and have observed one postwar survey after another ignored and shelved.

The growing fear in all quarters that Russia meant to promote aggression by force, her development of the atomic bomb, and finally the Korean war, all had a healthy effect in stimulating a buildup of our military strength but at the same time introduced several dangerous trends.

For one thing, adherence to the "balanced force" tradition has meant more of everything. And while all three services obviously were lean and deserved more, the buildup has been approached emotionally and, for the most part, without the guidance of a unified strategic plan. With our leaders reluctant to upset the "balance," we have grown fat in the elements needed least and lean in the elements needed most.

The Korean war, by virtue of panic-inspired analysis, has been mistaken by many as a pattern for all future threats (which no doubt has delighted the Politburo), rather than a periphery war with limited objectives and limited requirements. This approach has stimulated a throw-back to the man-vs-man philosophy. And, the unrealistic air situation in Korea has revived all of the unsound arguments concerning the battle-tested tactical air concepts.

The consequence of all this has been more support for the "balanced force" tradition, more barriers for airpower development and more headaches for General Vandenberg. In light of the general trend, this recent action by the Joint Chiefs becomes even more of an achievement.

Still to be achieved, however, is adequate airpower in being or in the making—an airpower concept for the nation. As for the latter, our planning continues to reflect the invasion-and-occupation, blockade-and-strangulation philosophies of past wars rather than a strategy of air neutralization which is the only logical way to prevent—or win—a war with Russia. These thoughts should condition any feelings of victory that might be engendered by airpower's gains in the Battle of the Budget.

Indeed, should such gains prompt over-enthusiasm—almost an occupational disease with Air Force people—the results could prove fatal. For the recommendation of the Joint Chiefs must be approved by the White House and Congress before money for Air Force expansion is appropriated. With an election year coming up, this poses a number of problems—problems which would be multiplied if, by virtue of a pseudo peace move by Russia or for any other reason, the people lost interest in our preparedness program. The Air Force, of all the services, is in the most vulnerable position for an across-the-board cutback in military funds. Both Army and Navy have forces in being which meet their requirements of the moment. The Air Force, in the face of its requirements, exists largely on paper, and politicians find it far easier to cut back a plan than retire men and equipment from active service.

In appraising the action by the Joint Chiefs, these factors seem to be paramount: General Vandenberg and his staff have gone as far as a single service can go under prevailing ground rules. They have obtained approval of the Joint Chiefs. Now, except for probable grilling by Congress, they must rest their case. Now those above the service level must decide what the national pocketbook can stand in terms of military appropriations for fiscal 1953. Now the people must step into the picture—must guarantee that, come what may, the airpower program is maintained.

In the process, something may have to give. Thus, Congress should—as its duty to the people—examine the budget proposal most carefully. It must ask specific questions and demand specific answers from service representatives—answers regarding forces required, for what purpose, and for employment in what areas. Congress and the people must add up the answers wisely and cautiously before they allocate the tax dollar. We have confidence that the airpower program can stand on its merit and, at the same time, that the opposition will be heavy. At the moment, the nation can be proud of the Joint Chiefs' recent action regarding airpower's role in the war we hope we may not have to fight. The Air Force can be proud of General Vandenberg's effective introduction of an airpower concept to America. Now we must all roll up our sleeves and work to the end that airpower becomes a reality and the concept an integral part of national policy.—J.H.S.

Training FOR Tactical Defense

GUIDED MISSILES have become one of the major military elements in the over-all tactical defense picture.

Troops of the U. S. Army are being trained in the handling and application of these ground-to-air missiles, designed and produced specifically for tactical training purposes by Fairchild.

This program, forming the basis for future use of missiles requires specialized training on these specialized weapons.

Fairchild experts and equipment are playing their part in this basic tactical missile training program for the use of this effective defense weapon of the future.

ENGINE AND AIRPLANE CORPORATION

FAIRCHILD

Guided Missiles Division

FARMINGDALE, N. Y.

Fairchild Aircraft Division, Hagerstown, Md., Chicago, Ill.
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AIR FORCE
NOVEMBER 1951

Natural Barriers
Enemy Interference
Want and Waste
Human Frailty

The FOUR FREEDOMS of the AIR FORCE

By Major General Donald L. Putt, USAF
(Acting Deputy Chief of Staff, Development)

I. FREEDOM FROM NATURAL BARRIERS

HITLER and Tojo had just been defeated—World War II had hardly ended—when another tyranny began to cast its shadow over the Free World.

Throughout the second great war, the Allied Powers had held out to embattled peoples the promise of a post-war world of peace and cooperation. Over the horizon, men looked with hope toward a world which would provide: Freedom of Worship; Freedom of Speech; Freedom from Want; Freedom from Fear.

Thus, the dawn of the postwar era promised man freedom from oppression of the spirit and freedom from economic slavery —in short, every basic opportunity for a full and happy life.

Unfortunately, in the plans of one of the major Allied powers,

these promises were destined to remain unfulfilled. Beginning with the disquieting reports of anti-Allied indoctrination of front-line Soviet troops by political commissars in Europe in late 1944 and early 1945, and culminating with the unprovoked aggression in Korea last year, the grand design of Communistic imperialism for domination of the world has now become all too clear.

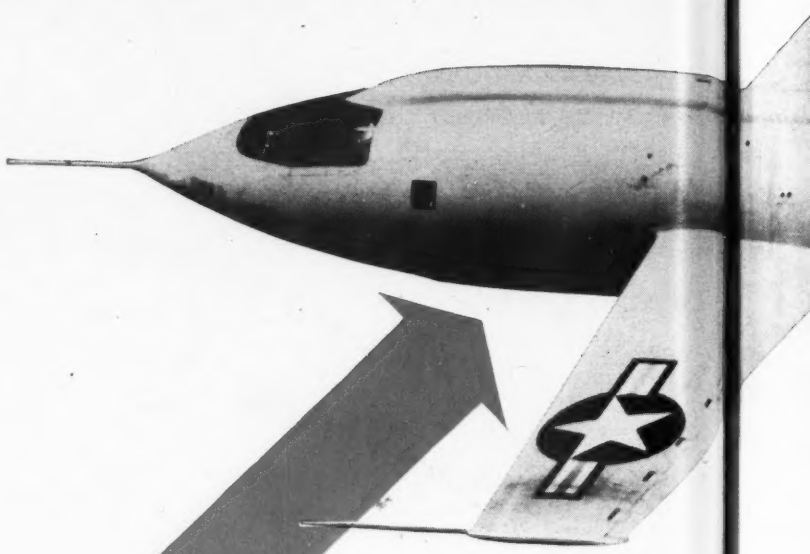
Communistic imperialism dismisses religion as the "opium of the people." It interprets freedom of speech as the right to repeat only the distortions and lies of state-controlled propaganda. It dooms the citizen to abject economic poverty—if not outright slavery. For freedom from fear, it substitutes the gnawing mental uncertainty of life in a police state. With an unbroken torrent of lies and unfulfilled promises, Soviet-led Communism fires its followers with a crusading zeal which compels a son to denounce and doom his father for the sake of a political favor with a system which seeks only to enslave and destroy him also. It is this unholy crusade which the combined spiritual, economic, political, psychological, and military power of the free world must counter, parry, and—if necessary—conquer.

Thus, the peoples of the world are locked in the greatest struggle of all time, the struggle between freedom and slavery. This struggle must and can be won without compromising the four freedoms which are fundamental to the continued existence of the free world. For this reason, our armed forces are assigned the role of maintaining overwhelming military power—power which will deter the Communists and which they won't dare to challenge, but power which all peoples, including those of us in the armed forces, hope will never have to be used.

The task of maintaining this military power is huge, complicated and expensive. But, above all, it is dynamic—ever changing. In the Air Force, this means reciprocating engines yesterday, jets today, and rockets some years after tomorrow. Always something new, for in a very real sense the air battles of tomorrow are being fought on the drawing boards and in the experimental shops today. In a very real sense, the research and development "war" is being won or lost during these days of half-peace.

In examining our research and development activities, it is useful to look at the progress we are making toward insuring that the Air Force will command the air in any future war. To guarantee command of the air, the Air Force requires its own "four freedoms." They are:

Freedom from Natural Barriers.
Freedom from Enemy Interference.
Freedom from Want and Waste.
Freedom from Human Frailty.



Looking at the research and development job from the point of view of the Four Freedoms of the Air Force serves two purposes:

First, it helps to remind us that we are locked in struggle against an unholy crusade. It bids us to dedicate ourselves to the technical war we are now fighting with zeal and idealism worthy of the trust of free men.

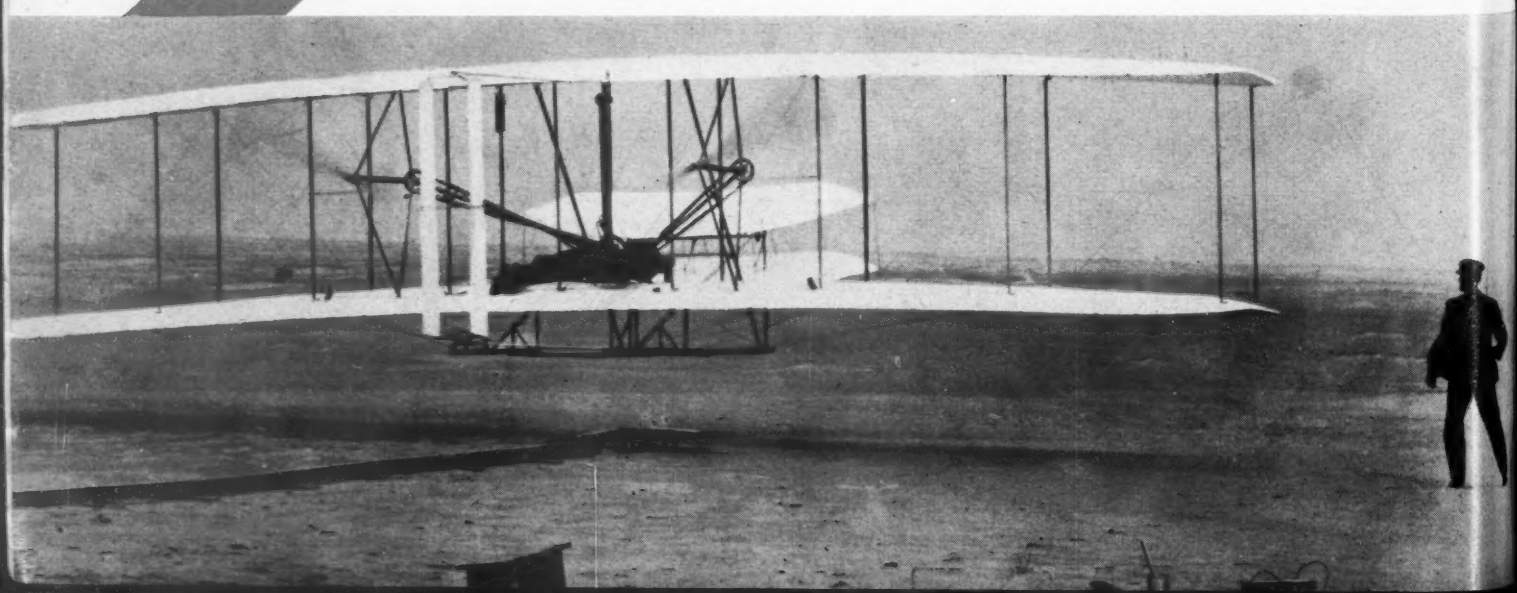
Second, it permits us to describe research and development activities without disclosing vital military secrets concerning specific weapons. *In the air battle, technical surprise will always be decisive.* To give away technical details of new weapons in time of peace is tantamount to broadcasting one's order-of-battle to the enemy in time of war.

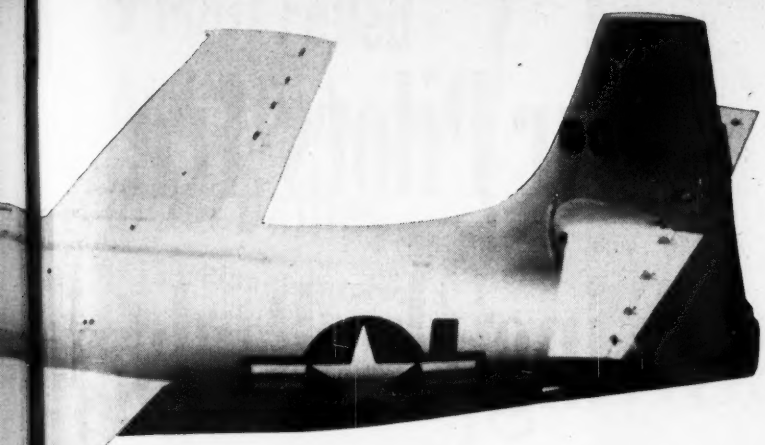
With this background, let us examine in this first article the progress we are making to free airpower from natural barriers.

Aircraft Range vs. Geography.

The technical struggle to make airpower independent of natural barriers began the moment the Wright Brothers' first plane became airborne. The most significant factor here is aircraft range. The greater the combat range of our aircraft, the more freedom we have to locate operational

The technical struggle to make airpower independent of natural barriers began with the first flight at Kitty Hawk.





Bell X-1 proved that "sonic barrier" wasn't there.

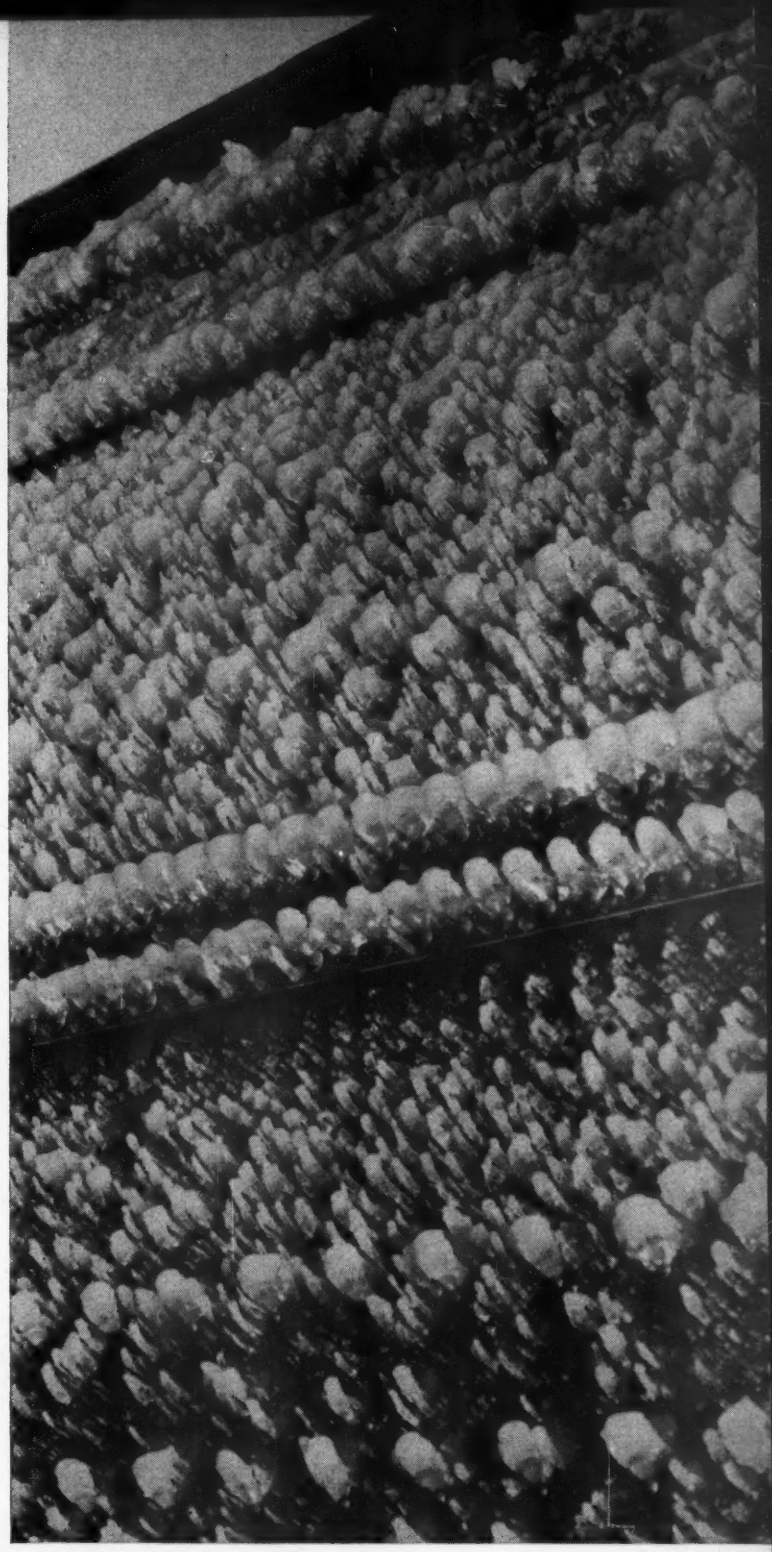
bases in suitable geographic areas. *Global ranges would mean complete freedom from geographical restrictions insofar as the locations of our bases are concerned.* Furthermore, the greater the range of an airplane, the greater the operational flexibility—routes for missions can be so planned as to place maximum strain on enemy defense and to provide for travel over inaccessible areas of an enemy nation where geographical problems make the maintenance of air bases extremely difficult.

It is significant that less than 50 years after the Wright Brothers' first flight, an Air Force bomber flew around the world non-stop, using air-refueling techniques. Air refueling has taken its place as a standard procedure on extremely long-range missions. We are continually working to improve rendezvous procedures, methods of fuel transfer from tanker to bomber, and rate of fuel transfer. Refueling is of even greater importance when applied to jet aircraft, which are capable of much higher speeds but at reduced ranges over aircraft powered with conventional reciprocating engines. In-flight refueling, with its range extension capability, may eliminate the distinction between "heavy" and "medium" bombers—terms based on range performance. In the last analysis, the so-called mediums may equal the "heavies" in range capability.

Of course, the jet engine is still in its infancy and much work is being done to improve its fuel economy. Higher compression ratios together with higher engine operating temperatures—made possible through novel methods of turbine blade cooling—should lead to greater fuel economy for turbojets. In addition, the propeller is still very much in the picture, probably initially for extremely long-range heavies and, later perhaps, also for high-speed tactical aircraft. Wright Aeronautical Company has under development an eight-bladed dual-rotation propeller of about 19 feet diameter, capable of being used on turboprop engines of very high horsepower. Work is also well under way to develop propellers which will maintain a good efficiency through the transonic and well into the supersonic region. Development of this prop is a noisy reminder of the "supersonic barrier," which the X-1 proved wasn't there.

In addition to work on various propulsion units, progress is being made toward improving the aerodynamics and thereby reducing the drag of high-speed airplanes. Here, boundary layer suction is of considerable long-range importance. The boundary layer is a very thin "coating" of dead air immediately adjacent to the wing, fuselage, and tail surfaces of an airplane. Recent research in England, and by the US National Advisory Committee for Aeronautics, has shown that the overall drag of an airplane might be reduced by as much as 40 percent by sucking this layer of dead air into the airplane through suitable ducts or porous skin surfaces.

(Continued on page 52)



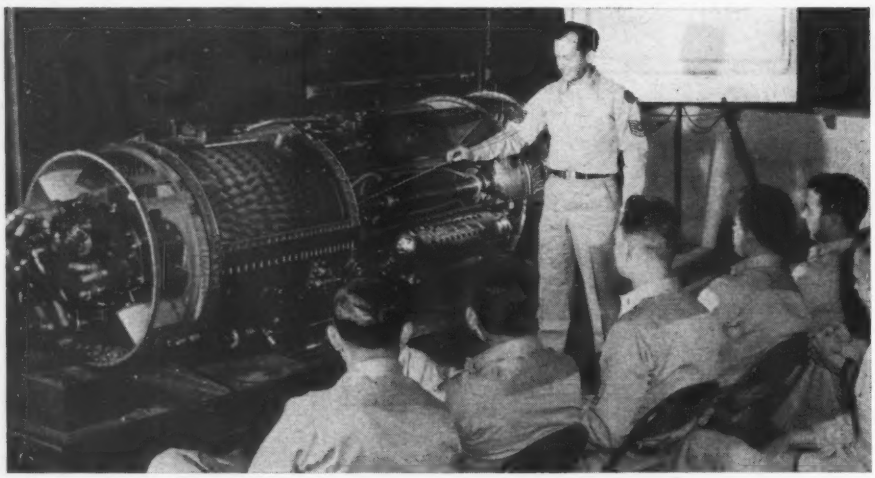
We still haven't conquered the weather. These are the faces of the enemy—deadly ice on a wing (above) and shrouding fog (below).

Why Our Pilots Are Outflying the Reds

Latest box score shows 71 MIGs lost, 13 probables, 131 damaged vs seven F-86s lost, seven damaged.

Planes are about even; pilots are the answer

Medical check includes "ride" in altitude chamber.

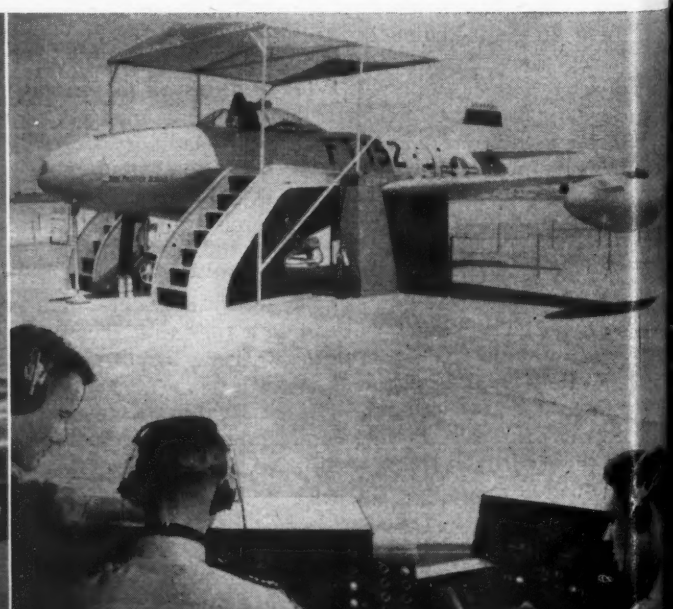


New pilots, Korea-bound, check the innards of the F-84 they'll fly (above). Gunnery instructor at Luke AFB (below, l.) talks shop with armament expert. First "flights" are in Captivair Trainer (below, r.), F-80 embedded in concrete.

THERE is no argument now, and probably never was, that our fighter pilots in Korea are better fliers than their opposition. No matter how you slice it the score has been so lopsided that the Reds ought to pack up and go home, or at least go back to school and learn how to fly fighters.

Any debate about Red vs. US fighter pilot abilities probably will revolve around schooling. In the final measure, that of planes shot down and damaged, any other approach to the question soon becomes academic.

The matter of one airplane against another, chiefly the F-86 against the MIG, is academic from the start. Give or take a few points and you come up with two airplanes in about the same class, performancewise, with the pilot the determining factor. F-86 pilots who have flown their 100 missions and then some in MIG territory are on record that they could swap planes and still win.



9 MIGs Felled And 5 Damaged In Jet Battles

133 Planes Involved In Deadliest Fight Costing 8 Red Craft

By the Associated Press

UNITED STATES 8th ARMY HEADQUARTERS, Korea, Oct. 16.—American jet pilots shot down nine Red jets and damaged five

By David Shawe

AIR FORCE Staff

The question of native ability can be discounted after a little thought. In the past ten years we have fought with and against too many countries in too many parts of the world to have much of an American superiority complex. The Red, whatever his real nationality, and even if he has never been off the farm before, can be taught to do anything the airplane can do. It may take him longer to learn than the lad who has been harassing Los Angeles cops with his hot rods, and it may cost his government more time, money, and equipment to teach him, but there is no practical reason why, in time, it can't be done.

There is something of an argument in the fact that the Korean fracas has never been a real air war.

But you can't get away from the fact that Reds and Americans are mixing in aerial combat almost every time the Commie ventures out of his

Nellis training includes firing high explosive rockets from F-86s (above). Tight formation flying (below, l.) is an important part of student training. Fledgling pilots learn cockpit familiarization (below, r.) in a cut-away F-80.

Manchurian shelter. That he comes forth only to defend his bases and supply lines is beside the point. The fact remains that his jets do tangle with our jets, and they haven't learned how to win.

Our fighter pilots' ability to win day in and day out certainly doesn't result from some native talent or abnormal instinct for self-preservation. So evidently it boils down to training. And lately, as the Reds get some training under their belts, the odds are narrowing.

What kind of training is it that gives both our old timers from World War II and the freshly commissioned youngsters such an edge? Has flight training changed much since the mass production days of 1943 and 1944?

One reason why USAF jet pilots are the world's best is that instructors are mostly combat veterans handpicked for their work. Here's wing-talk by an F-80 tail pipe.

Essentially it has not. There is more of it—about 265 total flying hours before graduation against 200 hours in World War II. Navigation, instrument flying, and cruise control get more emphasis. Training planes are heavier and hotter. Instructors for the most part are picked combat veterans. And the cadets tend to be more apt and enthusiastic students. More effort is made, too, to turn out well-rounded officers and military administrators instead of just airplane drivers.

No one knows how much training a Red pilot gets, but it has been obvious since the first jet skirmish that his piloting technique is pretty skimpy. Obviously he is learning the hard way, improving his techniques and tactics in his Manchurian sanctuary.

But our jet pilots are learning, too, both in their squadrons in Korea and Japan and in the stateside jet fighter schools. Wherever you go—to the jet school at Williams, to the F-51 school at Craig, and to the Combat Crew Training Schools at Luke and Nellis AFBs—you find an acute awareness of Korea. Instructors who are veterans of Korea command the attention and respect of fledgling fighters about to go over. The training curriculum, particularly in navigation and gunnery, is constantly being altered or beefed up on the basis of Korean experience.

Although fighter tactics are on a student's mind all the way, he doesn't spend much time on them until he has earned his wings, gone on into Combat Crew Training School, and then into a tactical outfit. At fighter school the emphasis is on mastering the airplane.

At Williams AFB, Chandler, Ariz., where all jet fighter pilots are trained, the student gets only a few hours of tactical theory and gunnery practice. The staff attitude is that he can't use his airplane as an effective weapon until he really knows how to fly it. Proof of the soundness of this approach is the behavior of Red pilots in Korea, who don't shoot very well simply because they can't fly very well.

Jet trainees at Williams (3525th Pilot Training Wing) fall into four categories—cadets just up from a basic school; officer students, who get the same treatment on the flight line but lead a somewhat less disciplined off-hours life; MDAP students from half a dozen North Atlantic treaty countries; and seasoned pilots of propeller-driven fighters, bombers, and even transports who come to Willie Air Patch for jet upgrading.

Except for the latter group, which moves through on a proficiency basis in a maximum of six weeks, and for the USAF cadets, who get an intensive military officer training course in addition to their flying and ground school, every student in every category gets the same six-months program at Williams.

The first thing to be decided is whether the student is really jet fighter material. The Training Command and Flying Training Air Force are conscious that it takes a particular emotional and physical makeup to make a good fighter pilot. So they weed the crop early. Fighter applicants are diagnosed before they leave basic school, and encouraged toward other types of flying if they lack the quick responses or the scrappy attitude needed to fly and shoot in jets.

The medicos at Williams give every newcomer a thorough physical check-up. If his reactions and responses are slow, if he can't take radical altitude and pressure changes, if he has even a minor physical defect which might later plague his ability to fly high and fast, then he is apt to be washed out at the start—or talked out of jets and sent to some other school. Going through basic with the greatest of ease does not mean that he is safe from washing out. Commanders and instructors at the school level are inclined to a man to fight any top-level pressure for quantity at the expense of quality.

Few washouts at Williams or in CCTS stem from academic deficiency. Lack of fighter capability, or fighter spirit, is almost always the reason. But the student gets the benefit of every doubt. A friendly personal interview precedes any action. Sometimes these interviews bring out personal problems—domestic, financial, or emotional—which can be corrected. But when a student must be washed out, he usually agrees with his instructors that, however good a man he might be otherwise, he just happens to lack what it takes to hold his own as a fighter pilot.

After the physical check and a series of indoctrination lectures, the student eases into jet flying after he has studied jet planes and jet power-

(Continued on page 57)

What—No Controversy?

A special AIR FORCE report

on Exercise Southern Pines

JOHN R. HODGE WOULDN'T BITE.

At Fort Bragg, N. C., efforts of newsmen to draw him into the great tactical airpower "controversy" evoked a calm and simple explanation from the stocky little lieutenant general who directed Exercise Southern Pines, largest maneuvers since the end of World War II:

If there is an Army-Air Force controversy, it must be on a "policy level" somewhere. The two services "always work together" on an operational level. There are "no problems they cannot settle amicably in the field", said Hodge.

That was evident if you watched Exercise Southern Pines, the pre-autumn war games in which Hodge, Third Army commander, put the 28th and 43d Divisions through a dress rehearsal for their present duty in Europe. It was evident if you saw the smooth coordination at evening conferences where Army and Air Force officers at the Joint Operations Center planned the sortie distribution for the following day. Or if you saw the refinements brought to the tactical airpower business from Korean experience and from technical development centers—refinements like the front-line radar that enables Tactical Air Direction Parties to handle night and bad weather close support missions, and the "close support board" which enables JOC to send down air strikes in seven minutes.

It is eight weeks now since Exercise Southern Pines ended and with it the latest effort to heat up the tactical airpower fight. Where is the controversy now? Not, apparently, in Europe where Southern Pines graduates are, or are going. There our air-ground effort is being organized in line with accepted doctrines. Not, apparently, in Korea, either, where appreciation for the doctrine of tactical air employment seems to grow hourly. The operating people seem to be leaving the "controversy" to those who have time for it on the Potomac River banks.

On the Fort Bragg reservation, Gen. Dwight D. Eisenhower's two new divisions, both former National Guard outfits, were given everything in the book in a maneuver that was anything but "razzle dazzle," as Hodge put it. There was training in rail and motor movement, offensive and defensive night operations, logistics, withdrawal and preparation of defensive positions, night relief, air resupply, airborne envelopment, close air support.

Under Brig. Gen. Henry J. D. Meyer, former 24th Division artillery commander in Korea, the Aggressor Force (comprising the 3d Armored Cavalry Regiment, a battalion of the 325th Airborne Infantry Regiment and the 511th Airborne Regimental Combat Team) also gave the US forces a stiff dose of Korean infiltration and guerrilla tactics.

Above all, the US forces (28th and 42d Divisions and 82d Airborne Division) learned what it is like to fight without air superiority. The 9th Air Force of Maj. Gen. W. R. Wolfinbarger, deputy maneuver commander, which provided support for both sides, had its planes divided so that the Aggressor had a three to one air advantage until midway in the war games.

"We don't want them (US troops) to get the idea that they can run free all over the country with their vehicles bumper to bumper," Hodge said. And the Aggressor Air Force, commanded by Col. Ansel J. Wheeler, saw to it that they didn't. Meyer, an artilleryman, used his artillery for artillery missions and usually let Wheeler's planes go after interdiction targets.

While the air units performed well, with an 80 percent daily availability score, they also performed with aircraft that portrayed the meaning of Gen. Hoyt S. Vandenberg's "shoestring" Air Force description.

Of six fighter squadrons (two from the 123d and 137th wings and one each from the 140th and 20th wings), three flew F-51s, three F-84s. Four troop carrier wings of the Eighteenth Air Force—the 434th, 443d, 435th and 516th—flew C-46 Commandos. There were only 16 C-119s available, along with four C-82s, for the airborne phases. The six C-122 assault transports, acclaimed by all hands, represented the entire production of that type.

The maneuver wound up with a two-day vertical envelopment in which 5,800 troopers of the 82d Division were dropped behind Aggressor lines while the two infantry divisions pressed forward in a coordinated attack that "annihilated" the enemy. This was the first completely airborne operation in this country since World War II, the first to employ assault transports, and the first drop of heavy equipment on such a large scale. Dropped were 80 jeeps, 14 105mm howitzers, eight three-quarter ton trucks, 25 three-ton platforms with supplies and seven each of 40mm and multiple .50 caliber guns.

The controversy which some observers discovered at Southern Pines was based on two incidents:

1. A hasty meeting at which Gen. Mark Clark, commander of Army Field Forces, told reporters that the matter of "operational control" of close support aviation was in issue. Control should be under the Army commander in the field who would have an airpower allocation from the theater commander. He knew of no one in authority in the Army who would place airplanes under control of a lower officer than an Army commander. That, it seemed to some, would leave the lower echelons relying on higher authority for *support* rather than having aircraft under their *command*, which is what happens now. Despite the "operational control" issue, Clark said the doctrines worked out by his office and the Tactical Air Command are "working pretty well" and he was not prompted to favor placing control under Army commanders by anything that may have gone wrong in Korea.

2. Earlier, General Wolfinbarger, at a press briefing, described Marine Corps close air support as the "best in the business" for its purpose but ill suited to field armies and tactical air forces. Marines are trained to operate on a narrow front, usually after the Navy has won air superiority and isolated the area. There is "no essential difference" be-

(Continued on page 59)

Bottleneck—machine tools in AF storage at Marietta, Ga.

Bottleneck—work stoppages at plants of major suppliers.

The Hard Facts of Aircraft Production

The broad industrial base for the Air Force expansion has been laid—a statement by the man who planned it

BY JOHN A. McCONE

Former Under Secretary of the Air Force

AS IS INEVITABLE within an economy in transition from a peacetime status to a condition of partial mobilization, the present production picture, insofar as it relates to aircraft for the Air Force, is a mixed pattern of achievement and disappointment.

To know how far we have come, and where we now stand, it is necessary to go back to the beginning of the buildup 15 months ago. At the outbreak of the Korean war, the regular Air Force was a 48-wing organization largely equipped, both as regards operations units and reserve inventory, with World War II aircraft. During the intervening months, as the result of a series of decisions occurring in close succession, the authorized force level was raised first to 58 wings, then to 87, and finally to 95 wings to be attained by the end of the Fiscal Year 1952. Recently another decision has been reached to expand the Air Force still further.

At the very beginning of the buildup the Air Force recognized as a point of basic policy that the first production goals were necessarily of an interim character; that the eventual national requirements for airpower were almost certain to demand a much greater industrial capacity than was called for in the initial force levels.

In line with this policy, I therefore proposed almost a year ago that, in the process of developing the interim production program, we should simultaneously incorporate within existing production facilities a reserve capacity capable of producing roughly twice as much as was called for in the initial schedules. This philosophy was accepted by the Department of Defense, and subsequently approved by the President and the Congress.

Thereafter several important steps were taken. In one direction, we at once began to pull into the production stream the reserve and standby plants and machine tools that had been held in readiness since the end of the last war. Simultaneously with the expansion of production within the aircraft industry itself, many leading industrial organizations—notably General Motors, General Electric, Ford, Chrysler, Packard, Studebaker, A. O. Smith Corporation, A. C. Spark Plug, International Business Machines, Servel, Kaiser-Frazer, and others—were called upon to divert sizable parts of their management, working force, and plant facilities from civilian production to Air Force production. In yet another direction, the Air Force, through the procurement channels of the Air Materiel Command, undertook to spread the work burden among numerous small plants through a system of sub-contracting by the prime manufacturers.

This past year might be described, in production terms, as the year of tooling-up. By and large, the original modest goals have been met, without serious collision with the competing demands of the civilian economy and without undue strain upon the manpower supply. Deliveries of aircraft today are running at a rate twice that of a year ago. If the present pace is maintained, I am confident that the rate of production can be doubled again by next spring and more than tripled by the end of next year.

Thus the industrial base for the Air Force expansion has been laid. In my opinion, the existing base of itself is sufficiently broad and firm, except in a few relatively minor instances, to support the aircraft and engine production schedules presently contemplated, without further increase in plants.

When one considers that the expansion is being brought off in the face of a revolution in aircraft and engine design resulting from the advent of jet propulsion and the penetration of the sonic barrier, I believe a remarkable job has been done.

However, three hard facts will control the progress of the expansion program from this point on.

Hard Fact Number One is the shortage of machine tools. The present stringency in this crucial sector is the result of two circumstances. First, the machine tool industry itself was depressed for several years prior to the onset of the present emergency. Some machine tool manufacturing plants had been shut down; others had been liquidated partially or entirely; and the industry as a whole was op-

erating at a loss. Secondly, the extraordinary demands resulting from the revolutionary design changes already mentioned have in turn created a requirement for many new and unique machine tools hitherto unknown in industrial practice.

The responsible government agencies, recognizing the critical nature of this particular situation, have begun to apply remedial action. But still more vigorous action is needed forthwith. Even if such action is forthcoming, six months to a year will pass before pilot line production of machine tools can start in many of the new sources, and it will be longer still before these sources themselves are fully tooled up for production.

Fortunately, the Air Force's reserve of machine tools has helped to tide the program over the first critical year. But by the first of next year the Air Force's entire reserve will be in use. Substantial immediate relief could be had, first by recourse to additional and as yet idle machine tools still held elsewhere in the military reserve, and next by taking over of essential tools in private plants not yet participating in defense production.

The right actions now would do much to break this particular bottleneck. But even so, I venture to say that we won't hear the end of the machine tool problem for another two years.

Hard Fact Number Two relates to the intensifying shortage in certain critical materials. Here again the difficulty arises primarily from the fact that the defense program must still compete, all too often to its disadvantage, with the civilian demand for prime materials. For example, the crisis in aluminum, precipitated in part by the hydroelectric power shortage in the northwest, is almost certain to force a considerable cutback in the allocation of this essential material for aircraft production, even if we empty our dwindling stockpile. And the tight squeeze in copper, as yet unrelieved by the development of any important new sources, is hindering the Air Force program in many ways, particularly in the matter of electronics equipment. In addition, the rarer industrial metals—notably nickel, titanium, columbium, and cobalt—which were in short supply during the last war, are now in still shorter supply because of the ever-increasing quantities needed in jet engines. The jet engine program alone could conceivably exhaust the entire visible supply for some years to come, even though a series of ingenious changes in engine design have in many instances made possible the substitution of more plentiful metals.

The alternatives seem plain enough—either we master materials, or materials will master us. If the country is to have adequate airpower, the control and allocation of critical materials must cut deeper than is presently the case.

I pass now to **Hard Fact Number Three**—the current wave of strikes and work stoppages that already approach industry-wide proportions. These constitute an obstacle to defense production as formidable as that of the machine tool and critical materials shortages. The summer strikes among many major producers of materials and component parts have hit the aircraft industry particularly hard, most notably as regards the production of jet engines. The slowdown in production which thereby resulted has been further compounded by other strikes affecting machine tool producers and the aircraft industry itself. More ominous still, new strikes of crippling proportions are already on the horizon.

I do not propose to attempt to pass upon the merits of those management-labor disputes. But in a time as perilous as this, the consequence of intransigence, whether on labor's or management's side, can no longer be tolerated. The public interest demands, it now seems plain to me, that at least during the critical months ahead, while the military establishment is being brought up to strength, nothing less than full and uninterrupted production shall be acceptable.

Clearly, as regards defense production, we have arrived at another of those periods of decision. Vast as the problems may seem in prospect, they are, in my opinion, wholly manageable if we act now with resolution. My experience within the military establishment has convinced me beyond all doubt that the military and civilian authorities—the legislative and executive branches of the government—are right in their belief that our security now rests primarily upon airpower. If this view is sound now, it is certain to be even more markedly so in the future, for the speed and reach of the airplane make it the logical means of delivery for the weapons of vast power that science promises soon to put into our hands. To some of us, the outer world may seem a vast and unfathomable ambush; but when I measure the potentialities of American power, and the high character and professional skill of the military men with whom I have been associated, I cannot but take a hopeful view. By being strong now—strong enough to deter any aggressor—we may yet achieve the peace all of us desire. At worst, we can thereby make sure that we shall never be defeated.

Bottleneck—shortages of critical materials. Example—the aluminum crisis brought on by scarcity of hydroelectric power.

NEW OFFICERS

It's tougher now to get a USAF commission than

But there are new avenues to gold bars and

and women is se

By E

WAF appointments are wide open.

WANT an Air Force commission? Officer openings in the USAF and its components are not as numerous as in World War II, but they do exist and are increasing. And in some categories opportunities are excellent.

More than a dozen paths now lead to AF commissions, counting the ones open to professional persons.

Included are the well-publicized avenues of aviation cadet pilot and the Reserve Officer Training Corps plus the lesser known aviation cadet observer, Women of the Air Force officer procurement program, and the new appointment plan for direct commissions in critical specialties.

AF commissioned rank also awaits Officer Candidate School graduates and some West Point and Annapolis graduates. Reserve appointments are available for lawyers, doctors, nurses, dentists, veterinarians, dietitians, therapists, and medical service personnel. Separate regulations spell out procedures professional persons follow to get Regular appointments.

Most officer procurement directives call for extended active duty in a Reserve status (rather than Regular, or permanent, rank), although career-conscious officers enjoy definite opportunities for Regular affiliation. In Fiscal Year 1951 Air Force awarded approximately 1,500 permanent appointments (including medics, lawyers, etc.).

During most of World War II, three principal avenues funneled Air Corps officers into the service: Aviation Cadet, Officer Candidate School, and direct commissioning of civilians. In those days physically fit high school graduates who could master the relatively simple initial tests received a crack at flying training, although washout rates at times were alarmingly high. Simultaneously,

Some Annapolis grads never wear Navy uniform, go directly into AF.

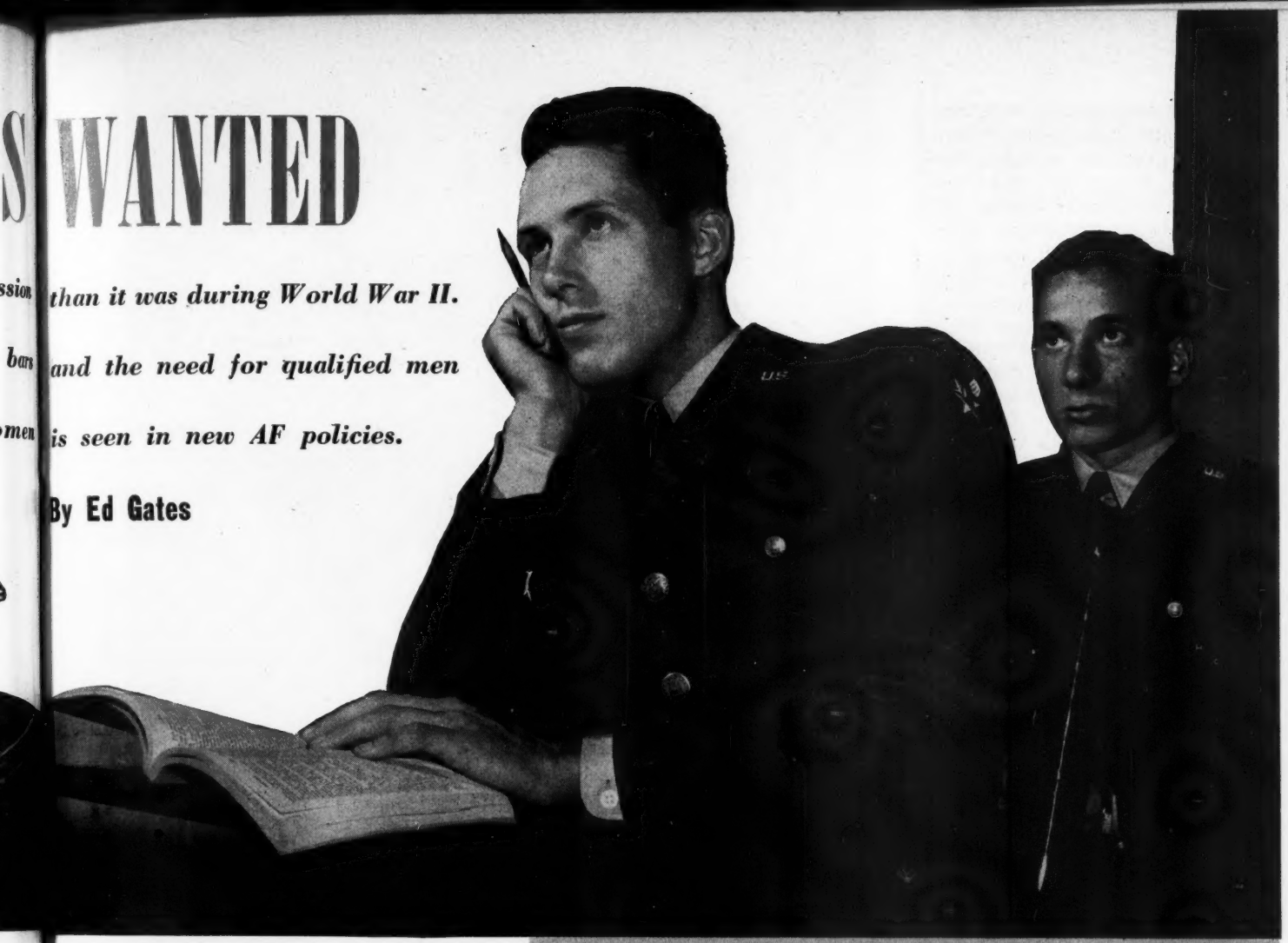
S WANTED

than it was during World War II.

and the need for qualified men

is seen in new AF policies.

By Ed Gates



ROTC yields a new crop each year.

thousands of generally qualified enlisted men—no particular specialty skill required—each month got their gold bars at the Miami Beach Officer Candidate School. Other thousands, usually with no previous military experience—insurance brokers, salesmen, clerks, automobile dealers, newspaper reporters, junior executives, accountants, etc.—simply received direct appointments.

Specialists were commissioned direct from civil life, but in total numbers were dwarfed by the wave of new general-purpose officers.

During and following demobilization, officer procurement tapered off. Several hundred ex-wartime officers seeking Regular rank made the grade and returned to active service in 1946-47. A few others came back for extended Reserve tours. Later the ROTC, Cadet, and OCS programs were stepped up.

Today—and probably for many years ahead—the spotlight is on specialists or potential specialists—experts prepared to step into specific technical schools. The World War II administrative officer—the adjutant, the supply man, the jack-of-all trades—remains in long supply.

Who's Eligible for USAF Commissions?

ROTC Age spread is 14-25. Entrance limited by law to regular college students at schools where the 187 Air Force ROTC units are located. Appointments are in grade of second lieutenant.

AVIATION CADET Applications for both pilot and observer training are submitted on AF Form 56, available at Army-Air Force recruiting stations, Air Force base Cadet-OCS examining boards, and Air National Guard units. AF Regulations 51-7 and 51-7A apply. Appointments in grade of second lieutenant.

OFFICER CANDIDATE SCHOOL Applications are filed on AF Form 56 (see above). Two years of college desired, but high school grads passing an equivalent test may qualify. Age spread is 20½-27. For male and female airmen and female civilians. AF Regulation 53-2 applies. Second lieutenant appointments only.

DIRECT WAF APPOINTMENTS Principal application forms, AF Forms 24 and 125, available at Continental Air Command units or through USAF Headquarters. AF Letter 36-4 outlines the program. Otherwise qualified women between 24-28 with at least three years business experience may qualify as second lieutenants; those 28-32 with five years experience, as first lieutenants.

DIRECT SPECIALTY APPOINTMENTS In addition to special professional appointments, 12 job fields listed. Age range is 18 to 56, ranks from second lieutenant to colonel. All require a minimum of a BA degree. Complete information available at recruiting stations, USAF Hq., and Continental Air Command's numbered air forces. Applicable AF directive is Air Force Manual 36-5. Applications submitted on AF Form 24.

REGULAR APPOINTMENTS Once annually Reserve officers are integrated into the Regular establishment under provisions of AF Regulation 36-5. Two years college desired but an equivalent exam may suffice. Only Regular first and second lieutenant appointments are made. Applications from active duty personnel go to immediate commanders; nonactive duty Reserve officers apply direct to USAF Hq.

Separate regulations pertain to Regular commissions for "Distinguished" OCS, AFROTC, and Aviation Cadet graduates.

For other Regular commissions, Reserve officers apply under the following AF regulations: lawyers, AFR 36-7; chaplains, AFR 36-19; doctors and dentists, AFR 36-21; veterinarians, AFR 36-31; and nurses, AFR 36-31 and AF Letter 36-36.

Entrance to West Point, which may lead to a Regular AF commission, open to airmen and civilians.

Complex new aircraft, weapons, and techniques quite obviously have altered personnel requirements. But the swing to technology has not lessened the need for leadership and command ability. Nor does it mean that all new officers will report for active service fully prepared to command a radio or radar unit, conduct scientific research, or pilot an F-86. One of the world's largest training schools, Air Training Command, awaits thousands of newcomers. Later, the Air University will prepare them for staff and command assignments.

But the specialization trend is strong. Present plans call for a January 1952 kick-off of the "Officer Career Program," designed to channel officers into one of 24 occupational areas and keep them there (more or less) throughout their active careers. So the day of the all-purpose, jack-of-all-trades officer is vanishing, even though many think that too much discretion is left to local commanders who, career program or no, can still switch designations at will.

Reserve Officers Training Corps

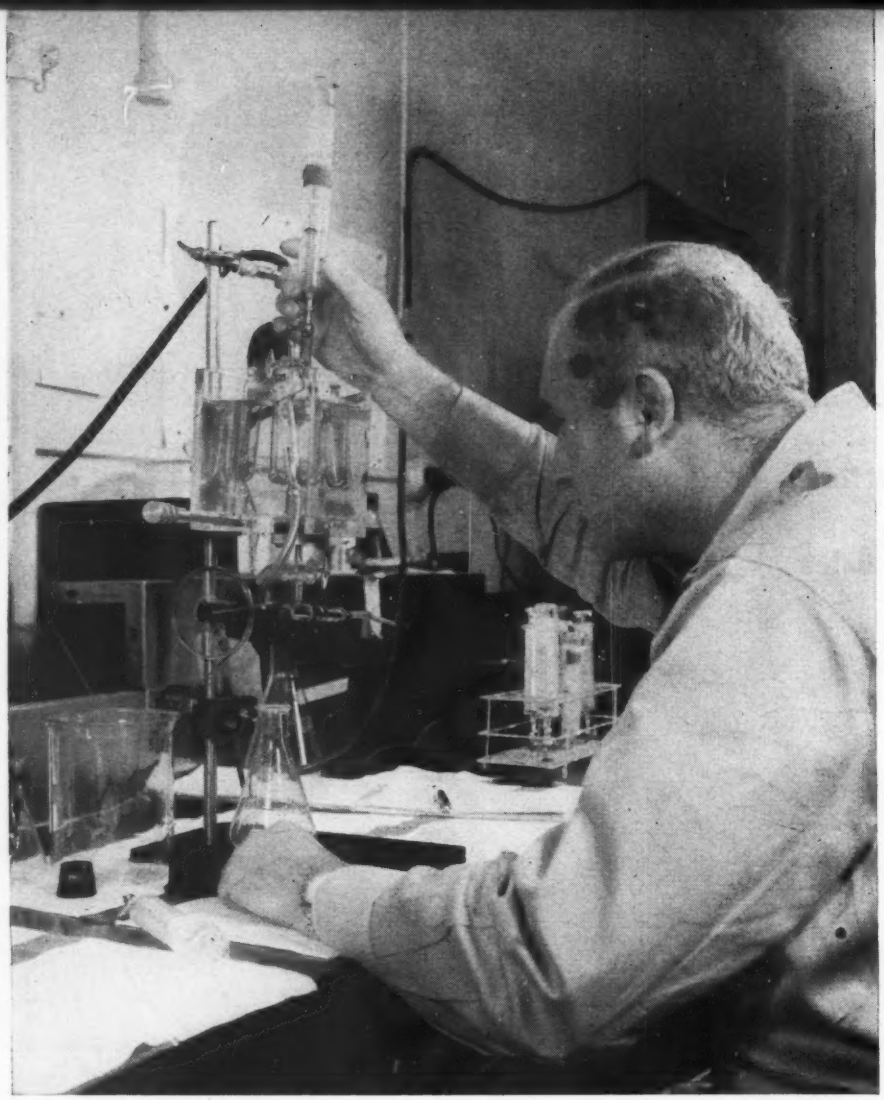
Most Air Force commissions today spring from the ROTC program. Air units are operating at 187 colleges, including 62 beginning this September.

Some 5,000 new AFROTC grads were heading for active service from fiscal 1951 production, and the program is geared to commission more than 10,000 in FY 1952. Annual student load in all units is being stepped up to about 62,000 (basic and advanced training). Eventually the AF hopes to get 27,750 second lieutenants annually from the program.

Although most ROTC officers are first digested by the Air Training Command, they begin training with a basic grounding in an AF-usable skill. During his junior and senior college years, each cadet specializes in one of several AF subjects.

Cadets receive uniform allowances, small daily subsistence, summer camp pay and, upon graduation, USAFR commissions. A few, with superior records, are offered permanent USAF rank, although those entering active service as Reserves may compete with other non-Regular active duty officers for permanent billets.

(Continued on page 66)



Professional appointments await specialists like doctors, lawyers, nurses.

OCS leads to gold bars. Two years of college are no longer a must if high school graduates pass special tests.

Blowing Your Top At 50,000 Feet

The faster and higher you fly the tougher it is to get out and down when something goes radically wrong

By John F. Loosbrock

AF doctor Maj. John Stapp in test rig.

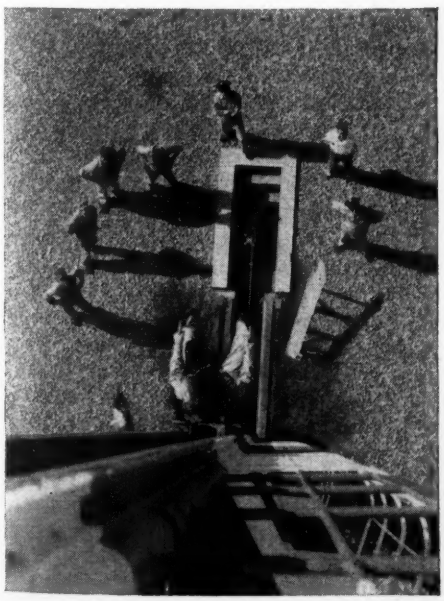
IT HASN'T been so many years since the parachute jump was a sure-fire thriller at county fairs. The business of getting out and down has come a long way since then. But through World War II, and even now in conventional aircraft, the process has been relatively simple.

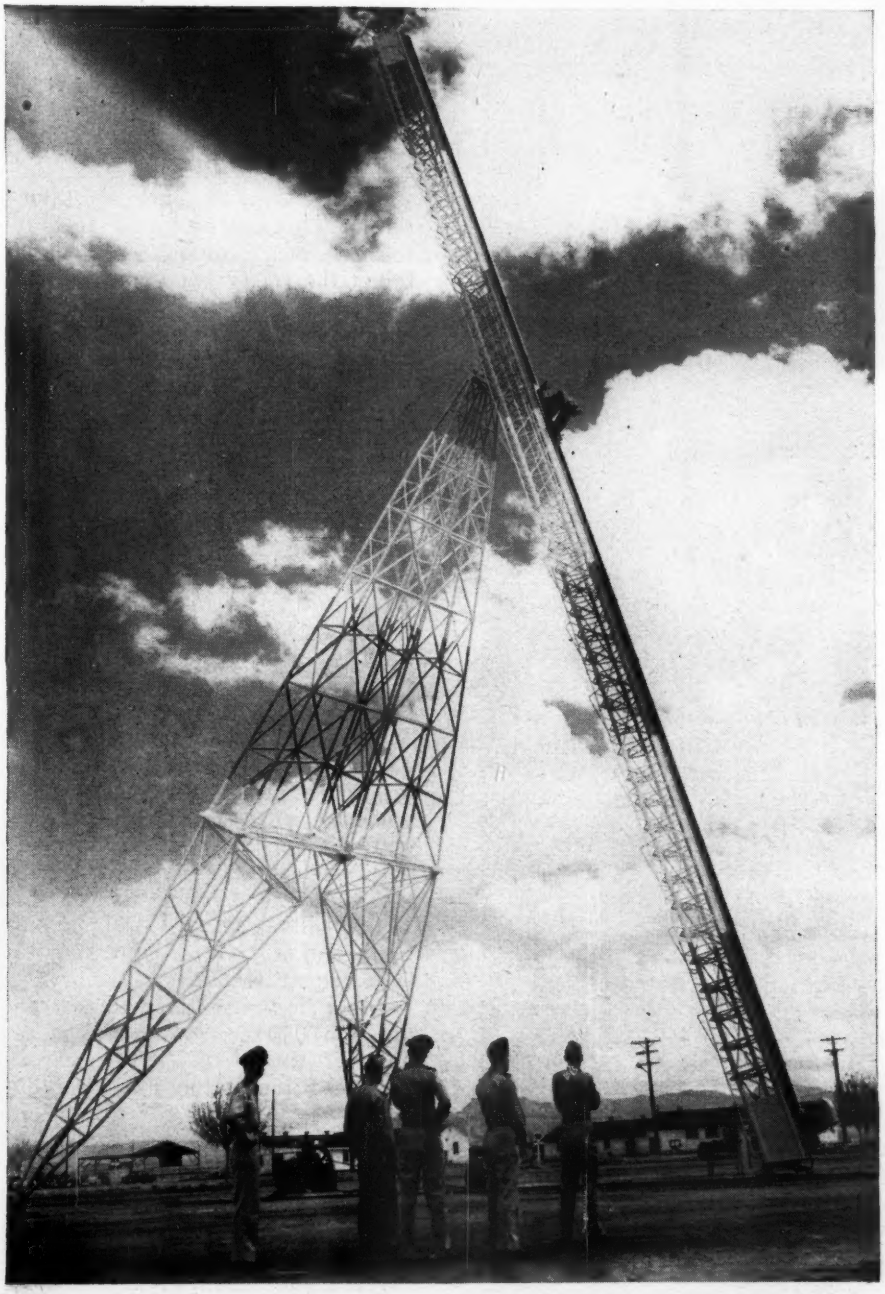
It goes something like this:

(1) Blow your canopy.
(2) Release safety belt.
(3) Leave the aircraft in an expeditious manner.
(4) Pull your ripcord.

The main thing is to get out of the plane without being slammed against it and to have plenty of room to fall. Statistically, most jump deaths are accounted for by one of these factors.

The introduction of the high-speed, high-altitude jet called for a re-examination of bailout procedures. Obviously the first problem was to





A pilot used to check out on the ejection seat the first time he bailed out. Now training towers like this are used.

get you out, for at 500 miles per hour or better you're imprisoned by a wall of air. The answer is the ejection seat, which fires you, seat and all, like a human cannonball up and over the tail of the plane.

If you're at low altitude the seat saves precious seconds that may make the difference between life or death. If you've been tooling along at 50,000 feet or better you've got another problem on your hands. You've got plenty of time and plenty of room. Almost too much, for if you open your chute at once you face a long, slow, freezing fall.

So you wait. The farther you free-fall the better. You'll hit warmer, denser air that will cut down the opening shock, give you a good oxygen supply, and will save you at the least a good case of frostbite.

Now the bailout procedure runs something like this:

(1) Jettison the canopy.
(2) Fire the seat.
(3) Open safety belt and kick free of seat.
(4) Pull ripcord.

Note that the second and third steps have been reversed. For pilots raised on the conventional procedure this can mean trouble. You might forget the safety belt, pull the ripcord and ride the seat into the ground while sitting on your unopened chute. It's happened.

Like a lot of emergency procedures, the weak link in the high-altitude, high-speed bailout problem is the human element. To cut this to the bone the USAF, through Wright-Patterson's Air Development Center and Aero Medical Laboratory, is working on automatic refinements to think and act for the pilot.

One approach has been to simplify exit by improving the seat itself. Now the cartridge which propels the seat from the aircraft is fired mechanically, a slender sear pin being rotated to allow the striker to fire the primer. This has an unfortunate tendency sometimes to rotate not quite far enough to release the striker. Two new catapults, with a failure incidence of only about one in 10,000, eliminate the sear pin entirely and rely on gas pressure to force the striker down.

Other important research is looking into the problem of the radar observer—the guy in the rear seat in two-place interceptors like the F-89 and F-94. Tests at Edwards in an F-89 showed that the observer had a tough time once the canopy was blown. The airstream played hob with his visibility and turbulence made it hard for him to hear the pilot over the interphone. He just plain didn't know what was going on and might not get out in time.

The Northrop tests, with Maj. John Stapp, USAF medico, as guinea pig, proved that the new Pl-A helmet and spherical visor developed by Air Materiel Command make it possible for the radar observer to eject himself at speeds up to 520 mph with no trouble. It also proved you can safely handle a plane at these speeds, once the canopy has been jettisoned.

More good news for the prospective Caterpillar is the new automatic chute, designed to take the guesswork out of the ripcord. It automatically provides delay of both time and altitude for safe jumping, at high speeds and at high or low altitudes.

Two devices make this possible—a timer and an aneroid element. Before you take off you set the timer for from five to seven seconds and the aneroid for an altitude 5,000 feet higher than the highest elevation over which you're going to fly. If the highest point is 10,000 feet above sea level, set the pressure-sensitive aneroid at 15,000. If you bail out at 50,000 feet the chute won't open until you've free-fallen to 15,000.

Another new device automatically separates the pilot and the seat after ejection with an automatic lap belt.

Bigger jets carrying bigger crews present problems of their own. Maybe you have to get out through the bottom of the plane. It isn't just enough to drop out. You must be forced down far enough to clear the aircraft. So you must be ejected—only down instead of up. Foot and arm rests like those on conventional ejection seats are out, since the downward push tends to force your arms and feet upward. To counteract this, the down-firing seats are fitted with ankle clamps to hold the legs in position. You hold a ring between your legs to fire the seat and to keep your arms from flying up.

A still further step, but one that is yet a long way off, will be necessary when the supersonic plane becomes operational. This calls for the whole pod-like cockpit unit to break away. The "ejection cockpit capsule" is completely enclosed, is pressurized and insulated. It will have survival gear, emergency rations and a radio to direct search operations.

Who knows? Maybe some day you'll push a button and your ejection seat will take you home.

Here's a look at the new high-altitude, high-speed bail-out equipment (top and bottom). Middle man is Dr. Albert Hetherington, AF physiologist, in climatic hangar wind-and-cold test.

TECH TALK

By Helena Redmond

A jet engine self-starter, the size of a typewriter but packing a 380 hp wallop, has been unveiled by Bendix. The 75-pound unit, designed for the Sapphire jet engine, needs only 3½ seconds to bring the jet's turbo-compressor to more than 2,000 rpm. The starter is the first completely self-contained mechanism for large jet engines, Bendix says, and eliminates the need for ground crews and bulky ground equipment.

In Operation "Eager Beaver," a 6-month exercise to begin Jan. 15 in the Yukon Territory, US Army and Canadian Engineers will try to carve huge floating airfields out of ice, from which air attacks could be launched against an enemy. The project recalls the Arctic Ocean ice islands discovered by the USAF, on one of which there has been a semi-permanent camp. And during World War II, seeking to build a similar ice airfield, scientists devised a compound called "pykrete," made of wood pulp and water, that appeared satisfactory but was never used.

B-25 Mitchell bombers, in mothballs at Pyote, Tex., since the last war, will get a going-over at newly reactivated Birmingham, Ala., Modification Center and see service again as TB-25 twin-engine pilot trainers. The Hayes Aircraft Corp. is doing the $5.6 million re-vamp for the AF and is scheduled to recondition four-engine Douglas C-124 Globemaster IIs after the job on the 25s is wound up.

The AF's latest vertical gyro indicator system, to aid in instrument flying, is slated for B-36s, B-47s, B-50s, B-52s, and F-86Ds. The device features an initial gyro-erection period of about two minutes and a warning signal to show when the system is ready for use. System sensitivity is ⅝ degrees, and the servo follow-up of 180 degrees per second makes the system suitable for use in high speed craft.

Versatile is the word for the new Lockheed C-121C, quickly convertible from a cargo carrier to a 106-passenger troop transport or a flying mercy ship for as many as 73 litter patients. Rated at 315-335 mph and powered by four Wright 3,250 hp compound engines, the craft has a cargo capacity of from 40,000 to 43,000 pounds in 5,463 cu. ft. space. The C-121C belongs to the same family as Constellations and Super Constellations but is more than 18 feet longer than earlier 121s. The 82-foot main cabin is longer than two railroad freight cars.

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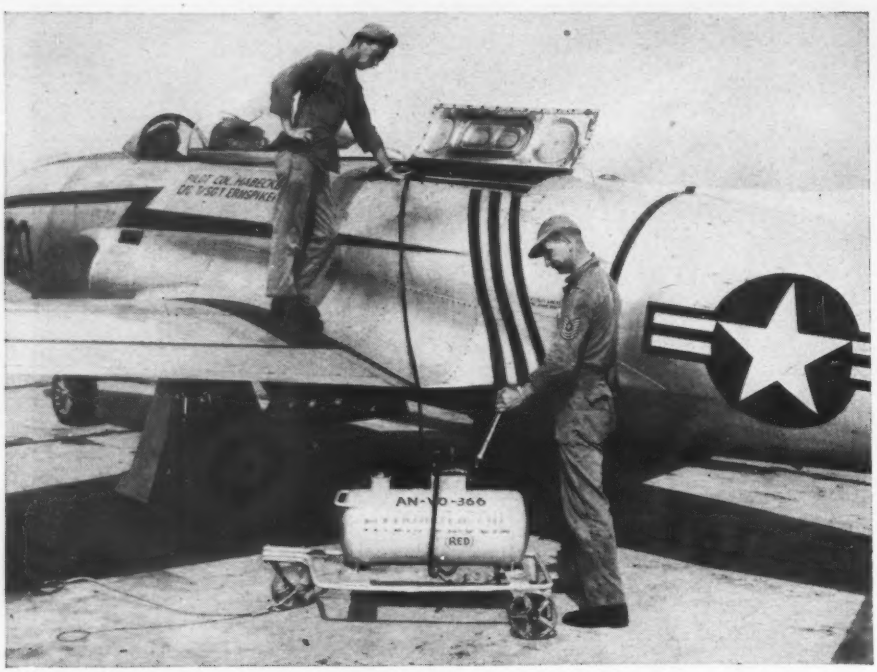
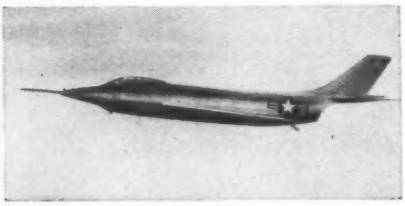
TECHNIQUE



Homemade Hydraulic Rig Is Portable

The USAF will run out of airplanes before it runs out of GI ingenuity. Impatient with conventional means of servicing aircraft hydraulic systems, a FEAF airman has fashioned a portable dispenser out of spare parts and scrap. Here, at an airbase in Japan, M/Sgt. Joe H. Majors shows another member of the 35th Fighter Interceptor Wing how his gizmo works. The rig saves both time and hydraulic fluid, can be used on F-51s, F-80s, F-82s, F-86s, and F-94s.



Navy Gets New Jet

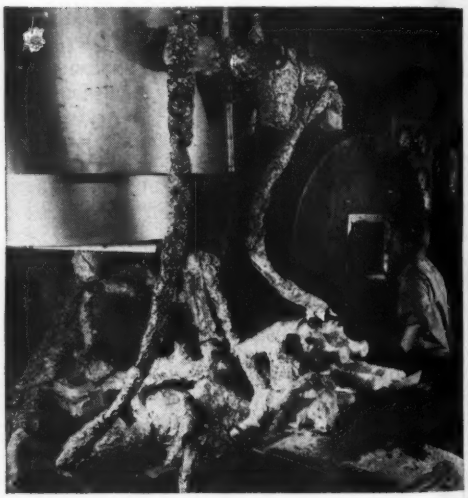
A new jet fighter for the Navy is the McDonnell F3H-1 Demon. The first experimental model of the single-jet, carrier-based fighter was flown last August. Initial production contracts have gone to McDonnell and Goodyear.

Global War Game

Facing each other across a table filled with electronic gear, two-man teams push buttons to wage global air warfare, fighting the equivalent of a year in one hour. Combatants feed such information as war production, numbers of planes and bombs, and target priorities into the machine which evaluates the relative efforts of the teams. The team having the higher level of electrical energy at the end of the "war" wins. The inventor of this Dynamic Air War Game (DAWG), Brig. Gen. Leighton I. Davis, commandant of the USAF Institute of Technology, sits at the right.

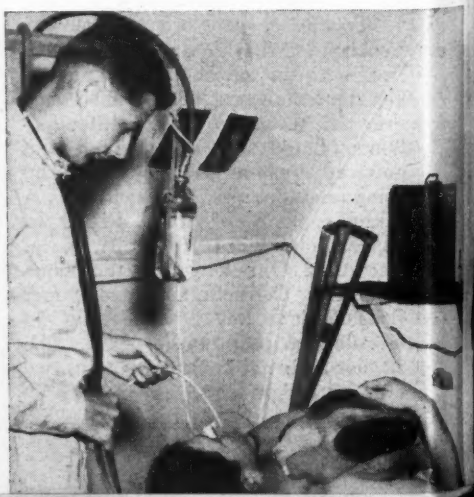
Savings from Salvage

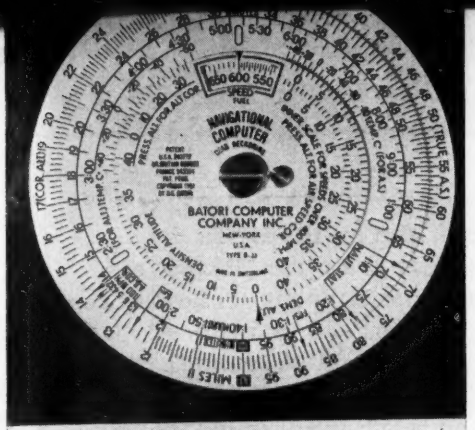
A rotating table for assembling C-54 exhaust collectors is the time saving device designed and built by S/Sgt. Dean A. Demasi of New York City. A member of the 374th Maintenance Squadron now stationed in Japan, the sergeant used salvaged material. It replaces a flat bench he formerly used in repairing collector rings.



Deep Freeze for Testing

To see how jet engine accessories will function at the low temperatures (to 67° below) they encounter at high altitudes, testing devices like this one are used. Here a Westinghouse technician watches the behavior of a new fuel pump. Fuel lines are insulated with crinkled aluminum foil, pressed into place by hand. The fuel tank is cooled with powdered dry ice.



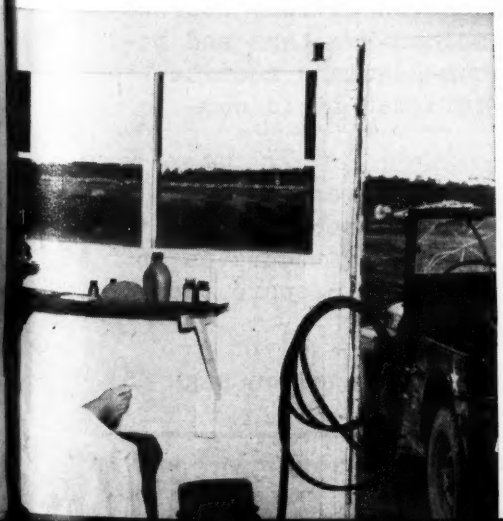


New Aid to Navigation

Billed as the only computer giving correct air speed with allowance for compressibility, the new Batori Navigational Computer is precision made of aluminum and comes in two finishes. It can be operated with one hand and yields speedy calculations for all planes, speeds, and techniques.

Jeep Saves a Life

A quick-thinking flight surgeon at a Korean air-base came up with a new use for the jeep when he used its engine vacuum to suck out blood from a patient's collapsed lung. Below, 1st Lt. Arthur H. Sampson re-enacts the operation, using a corpsman to demonstrate how he utilized the long rubber tube secured to the windshield wiper connection. The motor provided the necessary suction. Sampson administered oxygen simultaneously, using a plasma bottle for a vaporizer. The patient, who had been crushed by a vehicle, pulled through.



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Mobilization News

TEST SURVEYS of Reservists not on EAD were begun in Texas and California by ConAC last month, as part of USAF's new long range program for Reserve officers and airmen. Inventory is expected to provide current information concerning dependents, occupations, skills, and physical condition of all Reservists, according to Ass't. AF Sec'y Zuckert. Special personnel teams from 14th AF are personally interviewing Air Reservists residing in Dallas, Tex. In California, survey is being conducted with mail questionnaires by 4th AF, and is limited to members of Volunteer Air Reserve residing in San Francisco, San Jose, and Fresno counties. Comparison of two methods of obtaining information, including costs and public cooperation, will be evaluated by AF in mapping plans for nation-wide inventory of Reservists. (It has been officially estimated that Reserve airman pool totals approximately 75,000, the Reserve officer force about 220,000.)

AIR NATIONAL GUARD is opening an intensive drive for pilot trainees who, according to present plans, will return to ANG squadrons in or near their home towns after completion of pilot training with USAF. Procurement program, part of Long Range Reserve Plan, will be carried out on nation-wide basis and will be concentrated in areas where ANG units are or will be located. ANG squadrons now on active duty, approximately 80 percent of the total, are tentatively scheduled to return to inactive status in 1952 and 1953. (Present plans do not contemplate extension of service to 24 months in case of AFR or ANG personnel on EAD when Public Law 51, UMT&S, was passed, June 19, 1951.) Young men interested in this program should apply to nearest ANG unit or State Adjutant General. Applications will be accepted only from airmen of Air Guard, who, upon acceptance, will be enlisted in Regular AF.

5000 inactive Air Reservists will be offered 60 hours instruction in civilian institutions or factory-type schools throughout nation in USAF's contract school refresher training program. Classes will be held either on nights or weekends with enrollment priority going first to members of VART units, then VAR, and finally to AF vets who are enlisted in AF Reserve. Airman courses will be offered in Aircraft Propeller, Aircraft Powerplant, Radio, Radar, Aircraft Mechanic, Teletype Operator, Radio Operator, and Photo Laboratory Technician. Officer courses will include Aircraft Maintenance, Supply, Communications, Electronics, Budget and Fiscal, and Statistical Control. A study group of 20 Reservists and an available qualified school to teach the subjects are necessary in a particular area before a contract school course can be offered. Reservists interested in this refresher training should apply through their Reserve unit or directly to the numbered air force headquarters.

ASSIGNMENTS to 1952 Air Command Staff School field and squadron officer courses "should approach a 50-50 ratio" between Regulars and non-Regulars and between rated and non-rated, and for all 10 courses non-Regulars must be Voluntary indefinites, USAF Headquarters recently informed field commanders.

SHORT TOURS of active duty will be offered selected VAR officers and airmen during next eight months. Approximately 7,500 selected Reservists may receive 15-day training tours under the program. Purpose of tours is to provide additional training for VAR officers and airmen to prepare them for assignment in an emergency.

(Continued on page 45)

OFFICERS with foreign language proficiency are urged to request "general intelligence" type duty. Following fields now need more officer linguists: USAF Missions, USAF Security Service, Air Technical Liaison Duty, Psychological Warfare, Air Attache, and Special Investigations.

HARD-TO-FILL CIVILIAN POSITIONS existing in USAF at present time include: At AMC, Wright-Patterson AFB, Ohio--Air Intelligence Specialist, GS-14, 13, 12, 11; Electronics Engineer & Scientist, GS-13, 9, 5; Mechanical Engineer, GS-11, 7, 5; Maintenance Officers and Technicians, GS-9, 7; Mathematician, GS-13, 11, 7, 5; Aeronautical Engineer, GS-12, 11, 9, 7, 5; Physicist, GS-11, 9, 7, 5; Engineering Draftsman, GS-7, 5, 4; Clerk-Stenographers, GS-4, 3, 2; Industrial Specialist, GS-11, 9, 7; A/C Engine Accessories Test Opr., WB-16; A/C Test Propeller Repairer, WB-16. Air Proving Ground, Eglin AFB, Fla.--Ordnance Engineer, GS-12, 11; General Engineer, GS-15, 11, 7; Physicist (Photo), GS-12, 11. Tinker AFB, Oklahoma City, Okla.--A/C Hydraulic Repairer, WB-10; Jr. A/C Armament Servicer, WB-9; Jr. A/C Electrical Accessories Installer, WB-10. Hill AFB, Utah--Laborer, WB-3; Jr. Warehouseman, WB-4. McClellan AFB, Calif.--A/C Engine Parts Inspector, WB-16; A/C Metal Surface Repairer, WB-11, 16; Jr. A/C Gyro Instrument Repairer, WB-10; Jr. A/C Service Mechanic, WB-10. AF Missile Test Center, Patrick AFB, Cocoa, Fla.--Electronic Engineer, GS-13, 12, 11, 10, 7; Engineering Aide, GS-7, 5, 4. Where to apply for all types of USAF civilian jobs is explained on page 68, September issue of AIR FORCE Magazine.

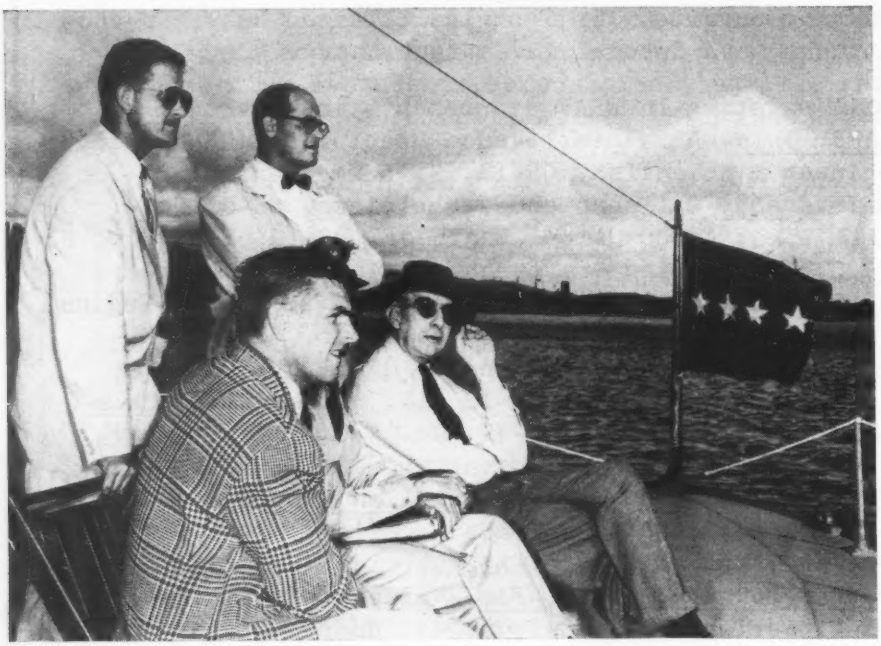
PROVISION by Brooks House Armed Services subcommittee has directed Department of Defense to submit to Congress, prior to February 1, 1952, adequate and equitable legislative recommendations (as uniform as practicable for all the Armed Forces) for promotion of Reserves, which shall conform as nearly as practicable to system for promotion of Regulars. These are to include recommendations concerning precedence (date of rank), forced attrition, distribution in grades, and constructive credit. Defense Department must also submit, by February 1, 1952, similar legislative recommendations for equalization of benefits between and among Regulars and Reserves.

TRANSFER to Honorary Air Reserve of non-active duty Reserve airmen who have been physically disqualified or have completed 20 years active or inactive service will soon be authorized under change to AF Reg. 45-1, which extended this privilege to Reserve officers only.

ROTATION program for personnel in Korea establishes following tours for combat crews: Fighter-type crews--100 missions; bomber and reconnaissance-type crews--50 missions. For support personnel in Korea the tour at present is eighteen months. However, USAF is conducting accelerated replacement program with objective of ultimately reducing this tour to twelve months. Due to heavy replacement requirements world-wide during present overseas buildup, this program cannot be completed before mid-1952, according to Maj. Gen. J. H. McCormick, Director of USAF Military Personnel.

WAF needs 38,299 more airmen and 3,397 additional officers to meet its personnel goal of 49,871. WAF is now composed of 7,681 airmen and 494 officers. Provision that no more than 2 percent of any Service could be women was suspended for three years under provisions of UMT&S Law.

ENTRANCE examination to U. S. Coast Guard Academy at New London, Conn., will be held February 18-19, 1952. Exam is open to qualified young men, military or civilian, between ages of 17 and 22. For detailed information, write Commandant, U. S. Coast Guard (PTP), Washington 25, D. C.



Stuart, in plaid jacket, tours Pearl Harbor with (from l. to r.) Roy Leffingwell, Hawaii AFA Wing Commander; Theodore Rinehart, Stuart's partner; Col. W. A. Dawson, MATS; and Sir Christopher Courtney, retired RAF officer.

Association Activities Over the World

New AFA president Harold Stuart tours Hawaii, Japan, and Korea; Ottawa host to AFA and RCAF Association conferences

Honolulu: Harold C. Stuart, new AFA president, was the principal speaker at a special dinner in his honor at the Hickam Officers' Club as he stopped off in Honolulu recently on his way to Japan and Korea. Stuart, visiting Hawaii for the first time, was greeted by members of the AFA Hawaii Wing, headed by Roy Leffingwell, and several representatives of the MATS Pacific Division.

During his four-day stopover, Stuart toured historic Pearl Harbor, scene of one of the most disastrous attacks ever inflicted on naval vessels by airpower. He later spoke to a large group of Air Force personnel, AFA members and their wives on the value to the Air Force of its allied components, and addressed the AF ROTC unit at the University of Hawaii.

Stuart was accompanied by his law partner, Theodore Rinehart. From Honolulu, the two flew to Tokyo and on to Korea. They returned by way of Alaska where Stuart surveyed military housing.

Harold Stuart, new AFA president, is welcomed in traditional Hawaiian fashion by MATS Col. W. A. Dawson.

Ottawa: AFA accepted the invitation of the Royal Canadian Air Force Association to attend its annual reunion in Ottawa and visit the RCAFA national headquarters for a discussion on activities and organizational matters. Ralph Whitener, AFA organizational director, discussed a plan for mutual cooperation between the two associations.

Highlight of the three days of conferences and social functions was the annual RCAF reunion, attended by more than 3,500 former and present members of the RCAF and their guests. The evening's entertainment was climaxed by the appearances of AFAers Jinx Falkenburg and Tex McCrary, well-known husband-and-wife radio and TV team. Tex did his usual good job of airpower plugging, and Jinx pleased the audience by knocking out autographed tennis balls with her famous racquet.

Whitener presented a scroll to the Ottawa RCAFA Wing on behalf of AFA's District of Columbia Wing. The scroll carried a message of good will, expressing the desirability of building a stronger relationship between the two capital Wings.

Air Vice Marshal Frank Waite, RCAF, watches AFAers Jinx Falkenburg and Tex McCrary autograph the tennis balls which Jinx later drove into the audience of 3,500 attending the annual reunion of the RCAFA at Ottawa.

Dave Hall (left) gets a goodwill scroll from AFA's Ralph Whitener as RCAFA president A. L. Morfee approves.

STATE ROUNDUP

CALIFORNIA

Pasadena: One of two new Squadrons chartered at this year's AFA convention was the Pasadena unit, with 23 members. The squadron meets on the third Tuesday of each month. Cecil C. Howard, 359 N. Los Robles, was elected commander. Assisting him are Joseph F. Brunner, Jr., vice commander; John J. Howard, secretary; George Lerner, treasurer; and Robert F. Brooks, Claude V. Toyek, Raymond Del Pino, and Louis S. Hauger, councilmen.

San Diego: AFA members in southern California, headed by Robert M. Overly, are working on the formation of an AFA Squadron at San Diego. Contact Overly at 115 West Palm Ave., El Segundo.

San Francisco: The latest issue of "Vapor Trails," official news letter of the San Francisco Squadron, carries a most ambitious fall and winter program. Number one project is the "Lt. Joseph A. Johnson Memorial Fund," dedicated to an active Squadron member who was killed shortly after reporting for active duty.

The fund will sponsor the many charitable activities of the Squadron. A special meeting will take place this month when the plan for the fund will be unveiled.

Other activities include Hole-in-One golf contest; Christmas baskets for Air Force needy; surplus paper drive; blood bank program; County Fair Night, Squadron Christmas party; and a membership drive.

The Squadron is now in the process of incorporating. Stewart Reed, 988 Market Street No. 201, is commander. His telephone is Ordway 3-8432 or Juno 3-0142.

ILLINOIS

Chicago: A new AFA Squadron will be organized in Rockford this month, according to Morry Worshill, Wing Commander. Those attending the November 8 organizational meeting will see the latest combat films on Air Force action in Korea. Contact Morry Worshill at 2054 Hood Ave., Chicago; telephone Edgewater 4-1137.

The Illinois Wing opened its fall TV schedule with films taken at the 1951 AFA Convention and Reunion in Los Angeles. Afterward, officials of the Illinois Wing and Chicago Group were interviewed.

Squadron 41: Chicago's Squadron 41 has expanded its clubhouse by adding a room to be used as a Ladies Auxiliary kitchen and a club office. The Squadron now has space for dancing and games, a bar, kitchen, and an office.

The Squadron's Ladies Auxiliary is making favors to decorate the trays of Children's Memorial Hospital patients during the Christmas season, and selling Christmas cards to finance Christmas parties for the children and the Squadron.

Squadron 41's clubhouse, called "The Hangar," is located at 4003 N. Broadway, Chicago 13.

AFA'S FAMILY AWARDS

For Outstanding Service to AFA and Airpower

Additional awards made at the 1951 Reunion and Convention in Los Angeles

MEMBER MEDALS OF MERIT

Rouben Arvanoff, Los Angeles, Calif.: For outstanding contribution to the success of the 1951 National Reunion and Convention.

Victor U. Bayers, Pittsfield, Maine: For conducting alone Phase One of the Association's Airability Program, even though the only AFA member in the area.

Philip Caldwell (Deceased), Los Angeles, Calif.: For many unselfish services to AFA, and for making available the facilities of his hotel.

James H. Doolittle, New York City: For continued outstanding service as a member of the Board of Directors and vital national committees.

Ira C. Eaker, Culver City, Calif.: For invaluable assistance to and guidance of Reunion and Convention Committees.

Harold L. George, Culver City, Calif.: For invaluable assistance to and guidance of Reunion and Convention Committees.

William H. Graves, Jr., New York City: For planning and conducting at Wright Field in the early days of AFA a successful membership program.

Larry G. Hastings, Toledo, Ohio: For inspiring leadership as Commander of the Toledo Squadron which has resulted in gaining widespread publicity and attention for the unit and the Association.

William N. Hensley (Deceased), San Antonio, Texas: For distinguished service as Vice President of the Southwest Region.

Arthur F. Kelly, Los Angeles, Calif.: For outstanding service as 1951 Convention Chairman and a member of the National Board of Directors.

J. H. Kindelberger, Los Angeles, Calif.: For outstanding service as Chairman of the Finance Committee, 1951 Convention and Reunion.

Thomas G. Lanphier, Jr., San Diego, Calif.: For outstanding service as Chairman of the 1951 Reunion-Convention Committee.

Beirne Lay, Jr., Hollywood, Calif.: For outstanding service in preparation of the script for the 1951 Air Power Pageant and Wing Ding.

W. Randall Leopold, Lewistown, Pa.: For continued outstanding service as Commander of the Pennsylvania Wing and on the Board of Directors.

Lloyd D. Mitchell, Los Angeles, Calif.: For outstanding service through producing the 1951 Airpower Pageant and Wing Ding in the Hollywood Bowl.

Mary Gill Rice, Forest Hills, New York: For continued outstanding service as Commander of the New York Wing and on the National Board of Directors.

Julian B. Rosenthal, New York City: For continued outstanding service as National Secretary and Chairman of the National Constitution Committee.

C. R. Smith, New York City: For outstanding service as a member of the Board of Directors and vital national committees.

James Stewart, Hollywood, Calif.: For outstanding service as Chairman of the 1951 Wing Ding.

NON-MEMBER MEDALS OF MERIT

Donald W. Douglas, Los Angeles, Calif.: For outstanding service by making available personnel and facilities for the 1951 Convention program.

T. C. Drinkwater, Los Angeles, Calif.: For outstanding service by making it possible for the Chairman of our 1951 Convention Committee to carry out the duties and responsibilities of that office.

Herbert O. Fisher, Caldwell, N. J.: For outstanding participation in AFA activities.

Y. Frank Freeman, Hollywood, Calif.: For outstanding service to and cooperation with the 1951 Reunion Committee.

William S. Friedman (Deceased), New York City: For outstanding contributions to airpower as technical editor and writer for AIR FORCE Magazine.

Robert E. Gross, Burbank, Calif.: For outstanding service by making available personnel and facilities required to carry out the 1951 Convention program.

William G. Key, Washington, D. C.: For unlimited cooperation and valuable guidance on numerous occasions in matters pertaining to AFA and airpower.

Mervyn LeRoy, Hollywood, Calif.: For outstanding service as Chairman of the Entertainment Committee, 1951 Convention and Reunion.

Louis B. Mayer, Hollywood, Calif.: For outstanding service as Chairman of the Host Committee, 1951 Convention and Reunion.

Floyd B. Odlum, New York City: For outstanding service which made it possible for the Chairman of the Reunion-Convention Committee to carry out the duties and responsibilities of his office.

Mundy I. Peale, Long Island, N. Y.: For outstanding cooperation in making it possible for the President of AFA to carry out the duties of that office, and for interest in the 1951 National Convention and Reunion.

Howard Strickling, Hollywood, Calif.: For invaluable assistance and cooperation with the 1951 Reunion and Convention.

Part of the 60 AFA members, their wives and children who attended the joint AFA Wing and Wing Auxiliary conference recently sponsored by the Mifflin County, Pa., Squadron at a comfortable mountain retreat near the city of Lewistown.

Randall Leopold, center, AFA national director, presents first Wing Auxiliary charter to Mrs. Prestie Headings of Lewistown, president. Wing Commander K. V. Moore, left, and officials of the Wing Auxiliary observe the ceremony.

MINNESOTA

St. Paul: John Kocourek, Jr., commander of the St. Paul Squadron, has announced that its safety campaign was highly successful and that the unit received special recognition from the Police Department and the Chamber of Commerce.

Kocourek also announced a fall and winter program that includes a theater party for children of Air Force veterans, a recognition dinner for St. Paulites who have contributed to the improvement of aviation facilities in the area, and a Squadron dance.

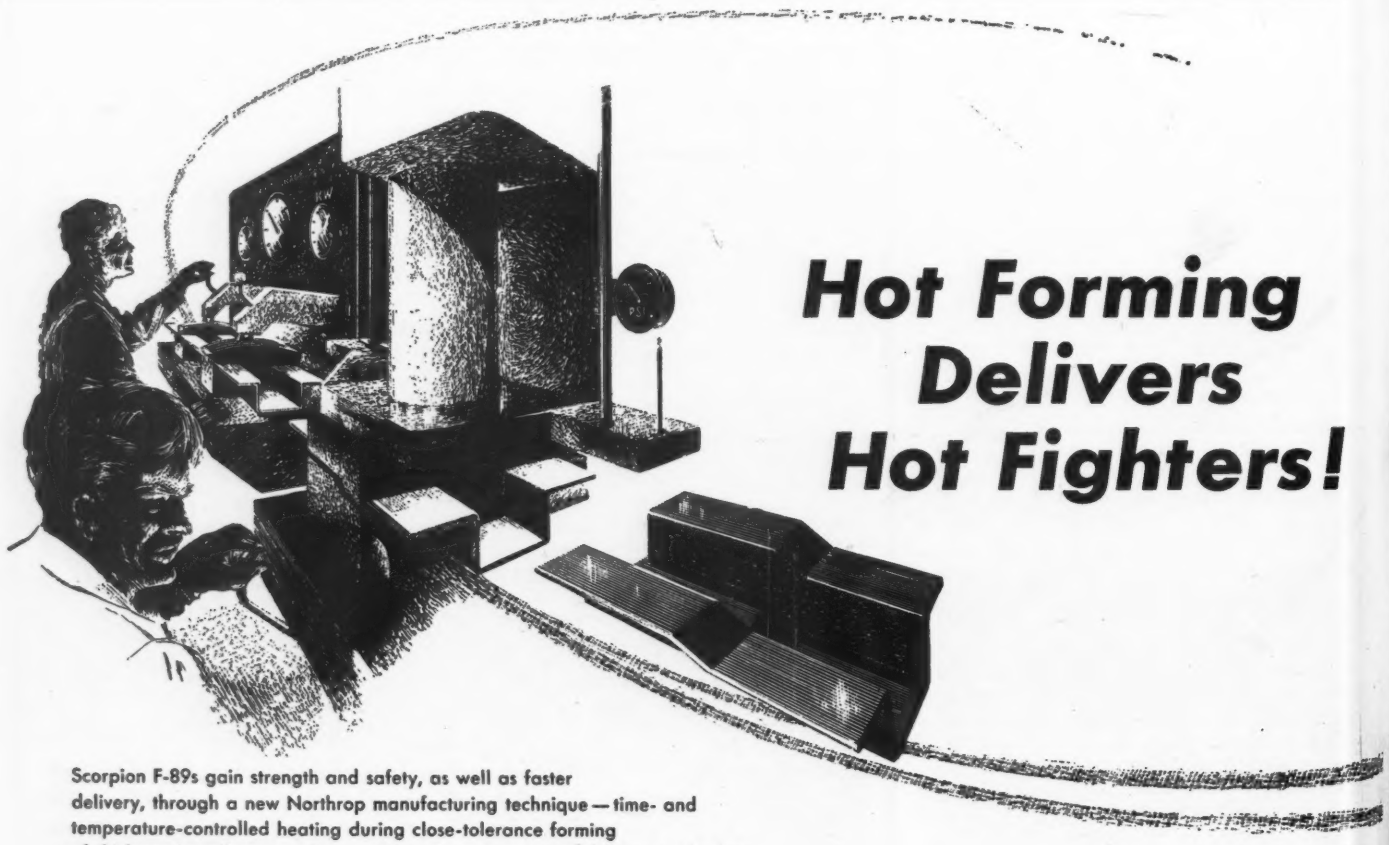
Monthly meeting date is now the last Thursday. Kocourek can be reached at 250 Willow Lane, Route 7, St. Paul 9.

MISSOURI

St. Louis: AFA members, headed by Roland E. Frey of 4202a Wyoming St., are organizing the St. Louis Squadron. Those interested can contact Frey by telephone at Sidney 5216. The unit will continue to meet at the White Rabbit's Fraternal Lodge, 2906 Ohio St., until permanent quarters can be located.

NEW YORK

Brooklyn: The First Brooklyn Squadron opened its fall program with a get-together at the American Legion Clubhouse, 160 Pierrepont St., the unit's regular meeting place. Art Wegman, 8501 Ft. Hamilton Parkway, Brooklyn



Hot Forming Delivers Hot Fighters!

Scorpion F-89s gain strength and safety, as well as faster delivery, through a new Northrop manufacturing technique — time- and temperature-controlled heating during close-tolerance forming of thick-section alloy extrusions. • Manufacturing resourcefulness at Northrop saves thousands of man-hours per month. The result is consistently high records in producing Northrop F-89 Scorpions . . . fast, heavily-armed, electronic search equipped . . . deadly modern counterparts of World War II P-61 Black Widows; and the new standard all-weather interceptors of the U. S. Air Force.

NORTHROP
Pioneer

Morry Worshill, left, Wing Commander of Illinois, presents William V. Kahler, president of the Illinois Bell Telephone Company, with an honorary membership scroll in recognition of his company's contribution to the Civil Defense program. Will H. Bergstrom, Secretary of the Wing, looks on.

Capt. Joseph E. Carr, left, who up to a few months ago was commander of the Albany, N. Y., Squadron, was recently given a "Welcome Home" dinner by fellow AFAers, following 66 missions in B-26s over Korea. Harold W. Rosenstrauch, Carr's successor, presents a past commander's pin.

9, is commander. His telephone is Shore Road 5-2148.

New York City: This state, with the largest AFA membership, recently lost its Wing Commander to California, AFA's second largest. Mary Gill Rice—who founded the NYC WAC Squadron, was later elected Wing Commander, and is now a member of the national Board of Directors of AFA—and her hard-working AFA husband, Stew, have just moved to San Francisco.

WAC and WAF participation in AFA activities on the West Coast should increase considerably with Mary sparking the drive.

Until a successor is announced, NY AFA correspondence should go to the Wing Secretary, Isabel Redding, 107 East 82nd St., New York 28. Mary's new address is 325 Buckingham Way, Apt. 801, San Francisco 27.

OHIO

Cleveland: The Cuyahoga Founders Squadron now has its own clubhouse, at 2006-10 Denison Ave. The members themselves renovated the building and the Ladies Auxiliary hung plastic draperies.

Edward Plecko of 2914 West 14th St. is commander. His telephone is SU 1-4308.

Toledo: The Toledo (Joe E. Brown)

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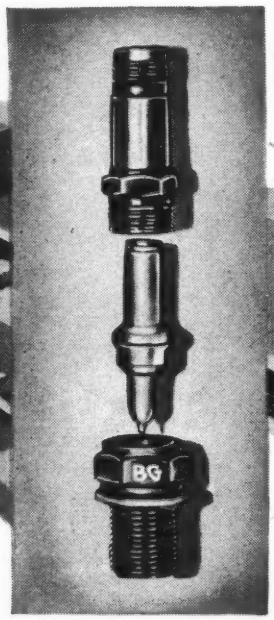
MODEL RB-27R



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For details on this BG service and BG products write:

THE BG CORPORATION
136 WEST 52nd STREET,
NEW YORK 19, N. Y.

Squadron has announced a fall program that includes an old-fashioned Hallowe'en party, and a group blood donor program. The unit also plans an Airpower Day, climaxed by a banquet. A special radio program is also being worked up.

Squadron Commander Larry Hastings can be contacted at 3855 Lockwood Ave., Toledo 12. His telephone is Garfield 1961, Ext. 237.

OKLAHOMA

Tulsa: John H. Crawford, Oklahoma Wing Commander, announces a State election meeting and reunion at the Biltmore Hotel, Oklahoma City, on November 17. Permanent AFA Wing officers will be elected, and the Wing's program for the coming year will be approved.

Reunions of various Air Force units planned during the meeting already include those of veterans of the Air Service Command and Air Materiel Command.

Information can be obtained from Crawford at 415 E. 15th St., Tulsa 14; telephone 2-5091.

PENNSYLVANIA

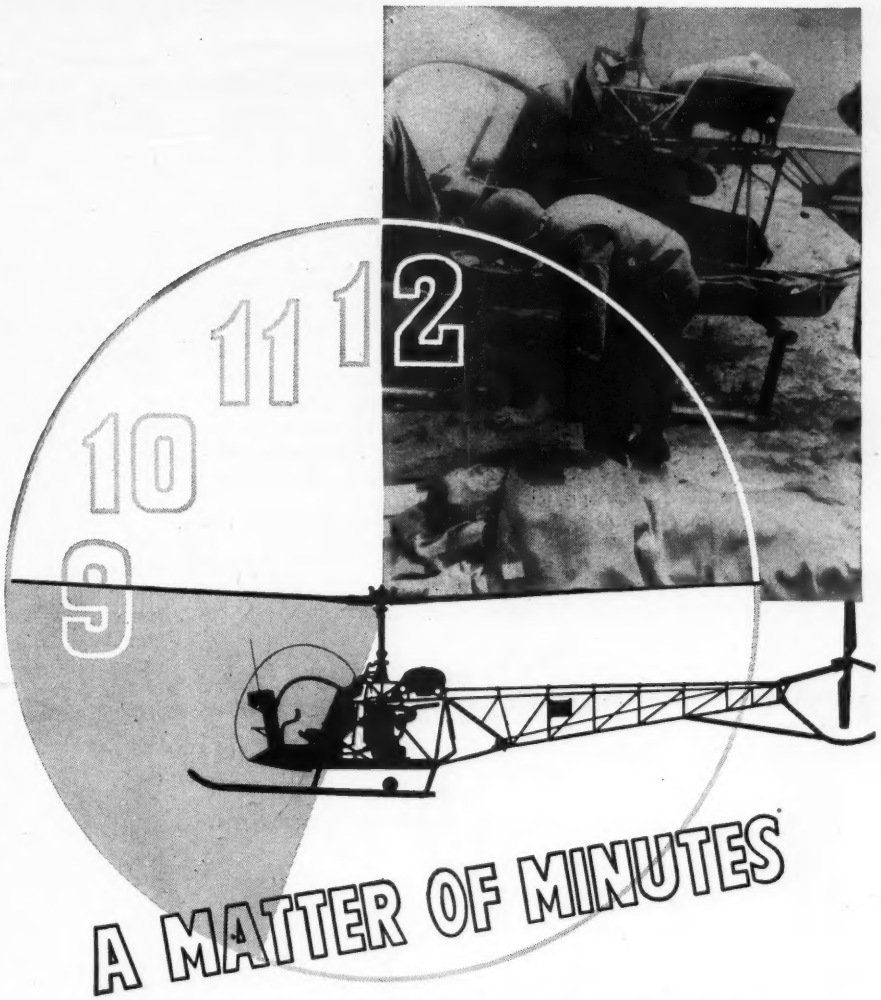
Lewistown: The Pennsylvania Wing recently chartered the first Wing Ladies Auxiliary of AFA. The ceremony took place during a joint Wing, Squadron and Auxiliary meeting in the mountains near Lewistown, with the Mifflin County Squadron as host. National Director Randall Leopold officiated at the ceremony, and Mrs. Prestie M. Headings, president of the Wing Auxiliary, received the charter.

More than 60 AFA and Auxiliary members attended. Mrs. Donald Gutshall, president of the Mifflin County Squadron Auxiliary, entertained the visiting ladies and served the entire gathering a home-style dinner. Separate Squadron and Auxiliary business sessions followed the dinner.

Wing Commander Kenneth V. Moore of Altoona talked to the Squadrons about the necessity of increasing their membership and sponsoring new Squadrons.

Eligible Auxiliary members throughout the state may contact Mrs. Headings at R.F.D. No. 2. Lewistown.

Ralph Marsh, Mitchel, N. Y., Squadron's program chairman, and Mrs. Marsh, check Squadron's booth at the Long Island Mineola Fair.



In Korea, battle wounded often reach a hospital faster than a traffic accident victim in metropolitan cities.

Combat records show that combat casualties have been evacuated by helicopter to a batallion or regimental hospital within 20 minutes after being wounded. This remarkable "ambulance" service is the contribution of helicopters such as the H-13D and the HTL-4, built by Bell Aircraft for the Army, Navy and Marines.

These maneuverable Bell helicopters are officially credited with saving the lives of 3,000 wounded U. N. troops in 6 months.

The majority were wounded so critically that evacuation by any other means could have been fatal.

While these helicopters have done almost the unbelievable... they are not robots. They need men to fly them. Army and Marine pilots continuously operated their helicopters dangerously close to enemy fire, repeatedly risking their own lives to help save the lives of others.

Bell Aircraft invites the application of qualified helicopter engineers.

BELL Aircraft CORPORATION

FOUR FREEDOMS CONTINUED

Complete freedom from range limitations will come with the development of aerial nuclear propulsion. Years of intensive study and research have established that nuclear-powered aircraft are technically feasible. Contracts have been let with Convair and General Electric for the construction of an airplane which will have, for all practical purposes, an unlimited range. There are presently no technical problems which would prevent the development of a nuclear-propelled aircraft capable of flying non-stop around the world at supersonic speed without refueling.

Weather and Darkness.

Of all the natural barriers, none compromises our current capability quite as much as weather and darkness, despite continued improvement in fields of development related to these problems. Each basic Air Force mission requires all-weather and night capability, and this need has been sharply pointed up by operations in the Korean conflict.

We are making steady progress toward the development of completely automatic navigational, fire-control, and bombing systems. These systems will operate completely independent of contact with the ground and will give the pilot complete freedom in flight. The pilot will manually control the aircraft during take-off from the ground but, once in the air, the automatic pilot will assume control of the entire flight pattern, from vectoring to the target, through the approach, the attack, and return to base. At the approach to the runway, within 50-100 feet of the ground, the pilot will assume manual control.

The air battles of tomorrow are being fought on the drawing boards of today. The research and development war is being won or lost during these days of half-peace

The problem of turbulence under bad weather conditions is being given increasingly more attention. Although actual applications are still far away, the advent of automatic control systems makes it theoretically possible to fly an airplane smoothly in spite of atmospheric turbulence, with consequent reduction in pilot and crew fatigue. Considerable work is being done on this subject by Cornell Aeronautical Lab, Douglas Aircraft, and the Massachusetts Institute of Technology. In this connection, it is a pleasure to report that some important fundamental gust and turbulence research work was performed for the first time by Major G. C. Clementson, USAF, in connection with his graduate studies at M.I.T.

Bad weather frequently means icing conditions. We need to know a great deal more than we do about icing, its causes and prevention, for the thin wing-sections of new high-speed aircraft are difficult to heat. The heat requirements for large wing surfaces such as those on the B-36 and B-52 are astronomical. The National Advisory Committee for Aeronautics has just completed research work which will reduce these heat requirements by a factor of 10. Jet engine icing has particularly serious effects and calls for ice protection in an area of the engine that is critical performancewise.

To test equipment under flight icing conditions without leaving the ground, the USAF relies on its Mount Washington, N. H., Ice Test Facility. Here a great plenitude of moisture-laden clouds combine with high winds and freezing temperatures to form icing conditions hard to duplicate in a laboratory.

The mercury drops below freezing in every month, below zero in 7 months of the year. The mean annual wind velocity is 40.6 miles per hour and Mount Washington holds the world's record for absolute extreme wind velocity—a 5-minute average of 188 miles-per-hour with a gust of 231 miles-per-hour.

Here a crew of 20 men expose model airfoils and other test equipment to howling wind and ice. And a hangar used jointly by the Air Force and the Navy tests full-scale operating jet engines under icing conditions. Facilities are cramped, and limitations of space and equipment have caused much vital research to be postponed or abandoned. But a new permanent facility has reached the design stage, and the Mount Washington installation can be expected to play a big research and development role in the future.

Infra-red devices offer many attractive possibilities for increasing the effectiveness of night operations. The USAF is pushing steadily ahead in this area also.

The invention of the transistor is the most important recent advance toward overcoming the limitations of weather and darkness. The invention of this device was predicted over two years ago by Dr. William Shockley of Bell Telephone Laboratories. It consists of a tiny drop of germanium metal—about the size of a pea in a pod. It does the job of a vacuum tube (in certain applications) with much greater reliability and requires only one one-millionth the power. Because the transistor itself is so small, deriving the maximum benefit from its invention will require the development of sub-miniature versions of all other electronic circuit components such as resistors, condensors, etc. Although the vacuum tube is by no means completely out of the picture, the transistor puts us on the threshold of an electronic revolution as important as the revolution in the field of explosives brought on by the atomic bomb. With the invention of this device, major strides should be possible in increasing the reliability and overall performance of the complex electronic components needed for all-weather and night operations.

High Altitudes.

Under the able leadership of Major General Harry G. Armstrong, Surgeon General, USAF, we are entering a whole new field of Space Medicine, exploring human problems involved in flight at extremely high altitudes and speeds. The pioneers in this field are trying to learn, for example, how various types of radiation in the outer atmosphere, including cosmic and gamma rays, affect human beings. They are also concerned about the loss of gravitation at very high altitudes. An aircraft flying parallel to the earth's surface at Mach 3 will reduce the pull of gravity on the pilot by one-sixtieth. Doubling the speed will result in a 15 percent reduction of the gravitational force. In flight at altitudes in excess of 100,000 feet, with the forward thrust removed, the aircraft will approach a state of "free" fall and for a short period, the gravitational force on the pilot is reduced to zero.

Experimental research with fighters operating at extremely high speeds in parabolic attack curves has taught us that the pilot is subject to conditions of zero gravity for periods of from 30 seconds to one minute. During this period the pilot is weightless. Under these conditions, pilots have experienced unusual and disturbing "sensations" which are not accompanied by any evidence of pain. We are attempting to simulate conditions of free fall through use of long-shaft copper mines and elevators and are gathering new data on such factors as blood pressure and heart rate under these extreme flight conditions.

Cabin pressurization must be provided for all high altitude flight since, under normal conditions, blood in the human body will boil at 65,000 feet. For travel outside the earth's atmosphere, we must face the problem of toxicology. Cabins of aircraft will have to be equipped with their own sources of oxygen, as is now provided for rocket propulsion, or with the capability of manufacturing oxygen. We must find a way to rid the cabins of toxic gases, and come up with the answers for humidifying the cabin air. In the upper stratosphere, we face the possibility of poisonous gas penetration. This is also on the growing list of "unknowns," for which the pioneers of space medicine must find answers in the years ahead.

Extreme Temperatures.

Those old enemies, heat and cold, are still very much with us. Equipment and personnel must be capable of proper functioning and performance under extreme ranges of temperature and service conditions. Operations vary from the sub-zero Arctic regions, where all activity can be brought to a standstill by weather elements, to the hot, steaming, rotting humidity of the tropics, where equipment built to last a lifetime under normal conditions will rot in a matter of weeks or days. Many of the

(Continued on page 55)

FOUR FREEDOMS CONTINUED

tropical problems are under a reasonable degree of control.

Pre-cooling of jet fuels requires major attention. Under exposure to high-ambient temperatures, jet fuels have a tendency to boil and evaporate during the rapid climb of modern aircraft.

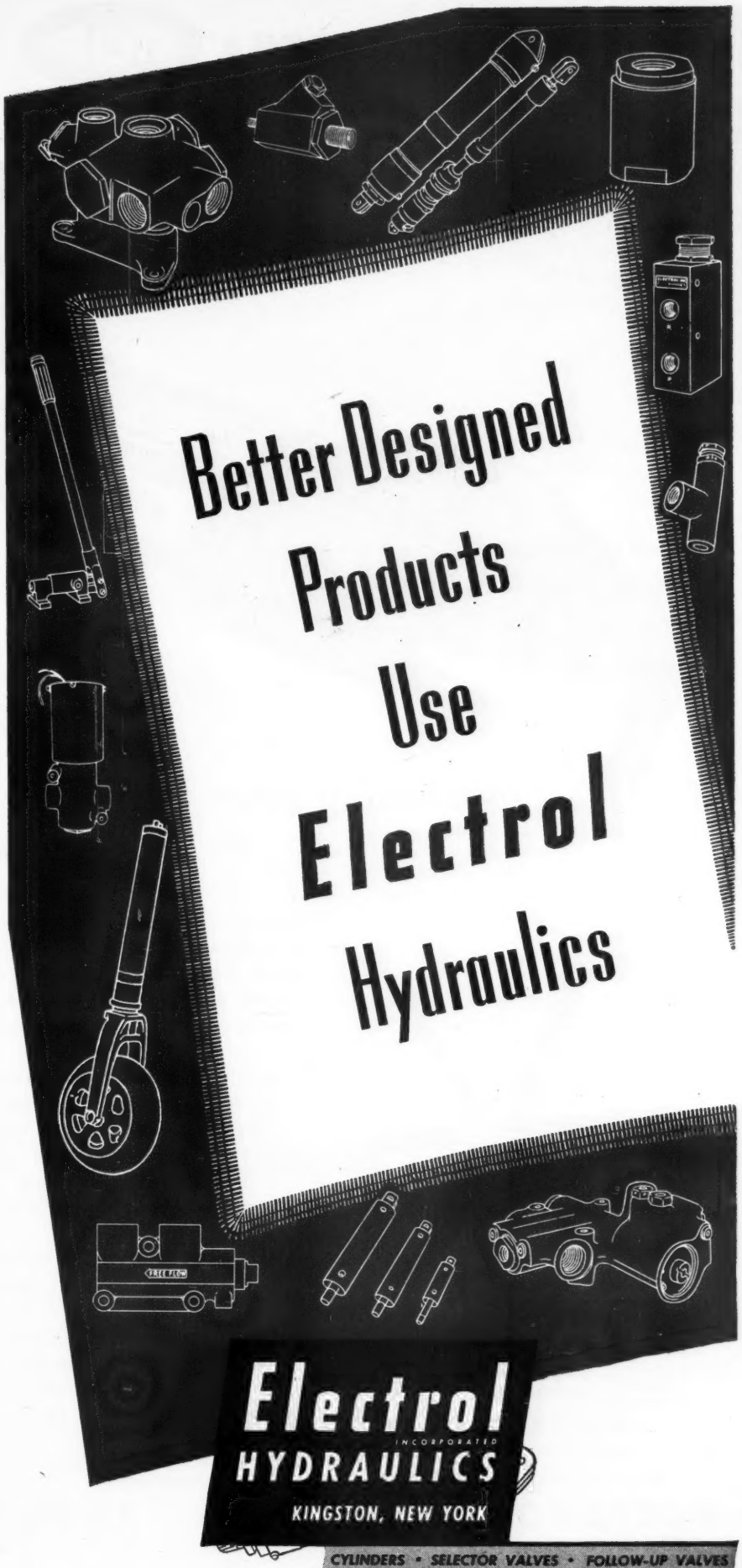
Extreme cold poses completely different problems. For Arctic operations we are developing lightweight, air-transportable shelters, for both aircraft and personnel, to permit maintenance of aircraft at full state of operational readiness when outside temperatures drop to minus 65 degrees Fahrenheit.

For aircraft travelling at great speeds at high altitudes, there is the problem of aerodynamic heating, caused by the passage of the airplane through the air at these tremendous speeds. At a Mach number of 2.0 at an altitude of 35,000 feet, aerodynamic friction will heat the entire airplane to a temperature of approximately 300°F. Under such conditions, solder begins to soften, standard hydraulic fluids are inadequate, rubber becomes plastic, and aluminum alloy becomes almost useless as an efficient structural material. A high speed fighter flying under these conditions would have to carry aloft a complete refrigeration system, capable of cooling electrical and communications systems, hydraulic units, tires, and many other items. For a typical fighter, the refrigeration unit would have a capacity sufficient to cool an average theater on a summer day.

These extreme temperature problems give rise to major research and development programs in two areas: First, there is the never-ending quest for new materials with satisfactory strength properties at elevated temperatures. In this connection, important applications of titanium are not far away. Second, the future high-performance airplane will carry aloft its own heating and refrigeration plant—if it carries a pilot. Development of the necessary light-weight units is an important task.

The Air Force is receiving invaluable assistance from the educational institutions of the nation. Weather forecasting studies are being conducted at the Universities of Cincinnati, California, New Mexico and Alaska, and at Duke, Temple, Columbia and New York University. At the Carnegie Institute of Technology, Cornell, Rhode Island State, Pennsylvania State, Oregon, Iowa State and the University of Utah, work is going on in the field of radiation and atmospheric energy. At Tufts College and Colorado University, the study subject is cloud physics. At Syracuse and Ohio State it is infra-red. At Chicago and Florida it is transmission research. Boston University is investigating atmospheric probing with missiles. Johns Hopkins, Rensselaer Poly and New Mexico A&M are working on climatizing . . . Purdue on microwave noise sources.

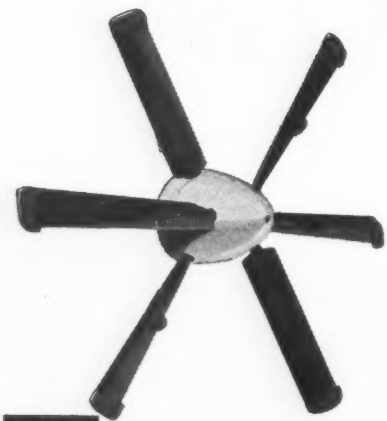
Aircraft range vs. geography, weather and darkness, high altitudes and extreme temperatures—these are the major problem areas in the technical struggle to develop for the Air Force adequate *Freedom from Natural Barriers.*



U. S. Navy's A2D Douglas Skyshark equipped with Aeroproducts dual-rotating propeller.

Aeroproducts

dual-rotating propeller converts power of the T40 into maximum thrust



Aeroprops efficiently harness the tremendous power of the Allison T40 engine in the U. S. Navy's A2D Skyshark. The result? Flashing, near-sonic speed *plus* range, climb and performance possible to date *only* with this great turbo-prop power and Aeroprop combination.

Years of research went into this amazing engine and propeller combination. Yes, years of research by some of the finest aeronautical engineers in the country—the men at Aeroproducts and Allison in cooperation with the Navy, which provided our Navy with a new and vastly more destructive weapon.

As a result, Aeroproducts is now preparing to deliver on the first production order existing for Turbine propellers.

Aeroproducts engineers are available for consultation if you have any propeller requirements in the subsonic, transonic, or supersonic range. Aeroproducts—backed by the full facilities of General Motors—will be glad to serve you.

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PILOTS CONTINUED

plants and transition flying in T-28s (or currently T-6s while the 28s are grounded). The latter acquaints him with the terrain and gives his instructor a chance to measure his man.

He studies cutaways and working models. He sits in a floorborne F-80 cockpit and memorizes the location and function of every dial, switch, and button. The only jets he flies at Williams are T-33s and F-80s. Later in CCTS at Luke or Nellis he checks out in F-84s. If he eventually gets into F-86s, it will not be until he is out of school and assigned to a tactical outfit.

His first real feel of jet power is in the ground-locked Captivair, an F-80, complete and otherwise flyable, but locked in concrete. Nearby is a control shack with complete instrumentation to read what the trainee is doing, to give him radio instructions, and to throw emergencies into the apparatus he is learning to control. The student starts and runs up the engine, and follows through complete simulated flights from taxi and takeoff to landing.

When he has the feel of the cockpit he switches to the T-33 for his first few hours of jet flying. His dual time, usually only about four hours, includes repeated landings and takeoffs, instrument and night work, minor acrobatics, formation work, emergencies in flight, and a lot more.

Once on his own, the jet student ventures farther afield, finds his way to and from strange and distant places. He works more and more, and closer and closer, in formation—mastering the instinctive teamwork which someday can save his life or that of his wing man. He gets in a little air-to-air and air-to-ground gunnery, alone and in formation.

Meanwhile he pieces together theory and practice in the classroom. Almost daily he sweats out a problem from here to there and back again. He plots his course, checks the weather, selects his landing points and alternates, notes radio facilities and frequencies, and computes his fuel requirements. Then he files a detailed flight plan with a panel of instructors at the classroom operations desk and stands by for grading.

The chief relaxation comes at mealtime. A jet student gets about all the nervous tension he can stand in his flying and class work. If he can't relax at chow time, he gets wound up to a point where he doesn't digest his food and eventually doesn't react efficiently.

The average USAF cadet at Williams is in his early 20s. His MDAP counterpart from Europe tends to be slightly younger—perhaps because not all European nations stipulate that commissioned officers must have passed their 21st birthday. (All Williams AFB graduates from abroad get two sets of wings—USAF and their own.) Officer students run a little older, although few of them have approached 30. In the JUG (jet upgrading) course, you'll find all grades from young second lieutenants to gray-haired generals.

(Continued on page 58)

AEROTEC AUTOMATIC CONTROLS

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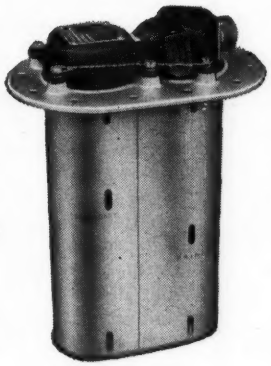

An Aerotec Dual Float Switch Top Mounted

Republic, Boeing, and other leading aircraft manufacturers are using many types of Aerotec Automatic Controls in increasing numbers. These controls are custom designed and built to meet specific problems of high speed and high altitude flight in today's aircraft. Each Aerotec automatic device passes rigid tests duplicating actual flight conditions to assure its efficiency and dependability.

The planes shown above are typical designs that incorporate Aerotec Automatic Controls. The Republic F-84E Thunderjet, a combat-proven craft, uses Aerotec pressure switches and a new dual float switch suitable for tip or pylon mounted auxiliary fuel tanks. Boeing has long used Aerotec valves, float switches, and pressure switches on their famous planes.

When you are faced with problems of automatic controls for flaps, landing gear and cabin heater applications, fuel transfer, flow indication, etc., contact Aerotec. One of our instrumentation specialists is near you, ready to give prompt and able assistance at any time. Call or write.

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PILOTS

CONTINUED

When he gets his wings and commission at Williams the new jet pilot, however green he may feel, has been judged capable of looking out for himself and his airplane. He knows more or less instinctively whether he is upside down or right side up, and what to do about it. He can get lost and find his way to safety on instruments. He can coax the last ounce of thrust and the last mile of range out of his tanks. He is supposed to be able to use his head in emergencies without a flight leader or wing man to guide or advise him.

He is a jet pilot, but he isn't yet a combat pilot. So the Training Command probably will send him on to another school, on TDY for about eight weeks, to teach him to use his airplane as a weapon.

The Combat Crew Training Schools, at Nellis AFB near Las Vegas, Nev., and at Luke AFB near Phoenix, Ariz., are something new since World War II. They operate on the idea that the best fighter plane driver in the world isn't worth his training and his wages if he can't effectively use his airplane to destroy enemy targets on the ground or in the air.

Even at CCTS students arrive every two weeks, and move through the eight-weeks course in squadrons of 24 and flights of six. Training is handled in four main phases, whether the pilot is a 51 man from Craig or a jet jockey from Williams.

In the transitional phase flying and academic work move along side by side, with general indoctrination, flying health, survival, navigation, and cruise control stressed in the classroom. The transition flying program covers F-84 checkout (F-51 pilots who have come out from Craig AFB do not change planes but still get a thorough checkout with their instructor), terrain familiarization, night transition, air-ground Mosquito control procedures, standard formation flying, rat-race acrobatics, instrument flights, and cross country missions.

The second phase gets down to cases on air-to-ground target work down at the Gila Bend gunnery range, where there are simulated convoy groups, gun emplacements and troop concentrations to locate and try to hit. This kind of flying covers strafing, bombing and rocketry, from various angles and altitudes.

Along with the 20 or so flight missions in air-to-ground gunnery, there is a full program of classroom work in related subjects such as ballistics and harmonization, machine guns and rockets, bombing technique, explanation of the K-14 sight, and discussion of such ground attack problems as navigation and target identification, friendly troops, and JOC procedures.

In the third phase, air-to-air combat, students fly another 20 missions, usually in flights of three students and a leader, against tow targets at high altitudes and reasonably high speeds. Coordinated classroom study in this phase covers theory of air attack and fighter operations, study of the A-1 sight, and identification of friendly and enemy aircraft.

The final, tactical, phase gets right down to cases in flying which simulates Korean conditions as closely as possible. Korean charts, and simulated Korean weather and radio facilities are used. Grid coordinates and Mosquito control are applied to all flying on the gunnery range. Pilots get a 10-hour extended navigation flight which often takes them to the Atlantic coast and back to get in the required four hours of actual instrument weather. The same flight includes practice in pin-point dead reckoning. Long range navigation without radio aids, cruise control for maximum range, strange field landings, night rendezvous, and a GCA approach.

During the tactical phase there also are ground alerts and scrambles, actual escort practice flights with SAC training squadrons, and a couple of maximum load takeoffs from short-marked runways. Next to actual shooting, this last item seems to worry students destined for Korea more than anything else. And with good reason. It takes more than a little practice to hold a loaded jet on a short runway until just the right moment and then pull her off in the nick of time.

Despite the current emphasis on Korean practices and problems, some of the tactics and techniques actually being applied in Korea are under such a tight security blanket that they are not even taught in this country. But instructors refused to let this security limitation bother them. They can assume a good many of the problems and tactical solutions and they feel that, by teaching a pilot to handle his plane competently in any situation and to think for himself in the face of whatever the enemy may do, he will move on into his first fighter pilot assignment able to hold his own against any flier in the world.

CONTROVERSY

CONTINUED

tween the way the Marines and the Air Force handle close support but the Air Force has also the air superiority and interdiction battle to fight. In brief, Wolfinbarger said, "the Marine system won't do for us, and I don't think any responsible Marine officer will say it will." He said new weapons may alter principles; but until those weapons are in hand, tactical airpower should be governed by two principles which hardly are new. *First*, it must eschew the penny packet or foxhole viewpoint. The range, firepower, and ability of a weapon to give support must determine the level at which it is commanded. For instance, a fighter can be shifted across three army fronts and deliver its firepower in half the time an eight-inch gun can be shifted from support of one division to a division once removed. *Second*, tactical airpower must operate "with the view of preventing targets from becoming critical." Perfection cannot be attained but whenever a target becomes critical to the man on the front line, "we have failed by that much."

At this distance it is possible to make these random observations based on Exercise Southern Pines:

The assault transport, developed to operate on unprepared fields, eventually may replace entirely equipment drops in airborne offensives. Only troops may land by parachute. The transport is a first-class means of getting supporting weapons quickly into the drop zone and it does away with the complicated rigging necessary for paradrops. Both the Army and Air Force are enthusiastic about the possibilities of the forthcoming Chase C-123.

Helicopters may replace jeeps and small trucks for tactical transportation within the drop zones in future vertical envelopment operations.

The Army needs and apparently proposes to develop a division air request radio net separate from command and artillery nets. Troubles experienced early in the maneuver highlighted this need.

The Mosquito plane, which directs close support fighters, in the future may be the F-80. At the maneuver it was tried out along with the T-6, which is used in Korea, and the F-51. The T-6s survival chances are none too good and the F-51's flying characteristics make it unsuitable.

The Army may be expected to work intensively on heavy load carrying helicopters, convertiplanes and "fleeps" or flying automobiles.

The tactical airpower doctrines work and are being refined continuously. The great need is for endless training of the air-ground team.

RENDEZVOUS

CONTINUED

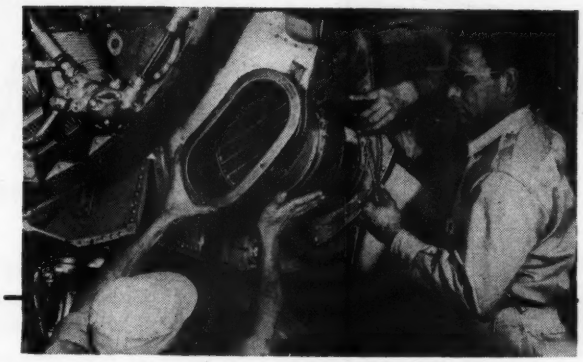
rons. Would also like to know if this Group is still active. Kindly address all information concerning the above to: *Dennis L. Gobrecht, 616 First St., Lancaster, Pa.* Same information requested by *Capt. Herbert C. Engelbrecht, Hq., 1st AF, Mitchel AFB, N. Y.*

94TH BOMB GROUP: Has there ever been published a unit history of 94th Bomb Group, which was a part of 8th AF in England during WW II? Would like to hear from anyone who knows if such has been published. *Richard H. Lake, 12242 Palatine Ave., Seattle 33, Wash.*

ATTENTION POLEBROOK BOYS: I am stationed in England flying for Pan American Airways from London to Hong Kong. I know some of my buddies would be interested in knowing the present condition of the old 8th Air Force base at Polebrook near Peterborough. The entire base is deserted and grass is growing on the runway. There are only about two unbroken windows in the tower. My old outfit was the 509th Sqdn. of 351st Bomb Group flying B-17s. I was a member of the outfit from May '43 to November '43 and would surely like to hear from some of the old gang. *Jack H. O'Mohundro, "Ashton House", Chilworth, Surrey, England.*

HEAVY BOMB GROUP: Could you give me any information concerning a written history of my group and if there was one how I could obtain a copy? Served in 512th Bomb Sqdn., 376th Heavy Bomb Group. *Clyde J. Keator, 125 Porter Ave., Bergenfield, N. J.*

PICTORIAL BOOK: I would like to find out if the 457th Bomb Group ever published a magazine or pictorial book on its group history. *Wilmot J. Miller, N. 5318 Fairmount Place, Spokane, 15, Wash.*



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The Airman's Bookshelf

Army Aviation Guide; Cruise Control for Low Powered Airplanes

by Max Daggett, Jr.
Capitol Printing Service, Little Rock, Ark., 26 pp., $2.00; 7 pp. and charts, $1.00

A new pair of lithographed information manuals by aeronautical engineer and aviation writer Max Daggett, Jr. The first, a survey of aviation as used by ground forces, should become a standard reference work. It traces military aviation from the early days of fixed observation balloons to today's artillery spotting, troop carrying, and evacuation of wounded by light craft. The book, which is illustrated with line drawings and photographs, points to the increased modern use of helicopters.

The second booklet is a factual treatment of cruise control techniques, used to obtain the best flight performance from small planes. It includes complete cruising charts for three models of Cessna aircraft.

A Flier's World

by Wolfgang Langewiesche
McGraw-Hill, 278 pp., $3.75

Wolfgang Langewiesche is one of those people (there are too few of them) who can do something well, and like to do it . . . and then write about it . . . and do that well too.

A Flier's World is a splendid book about flying, by a real flier. A real flier is one who lives flying and loves flying. Another such one was French aviator and writer Antoine de Saint Exupéry whose *Night Flight* and *Wind, Sand, and Stars* are among the best aviation writing. Saint Exupéry and Langewiesche are alike in many ways. To both, flight—specifically, *man* in flight—is a profoundly stirring thing. Both get a new vision of the earth, seeing it from the air as an insignificant but beloved planet, and a profound affection for the humblest men everywhere.

Langewiesche writes for all airmen: for the men who fly the planes and for those who design them. He also writes for those who have flown as passengers, and for those who have merely thought about flying, and for those who have never even seen an airplane. He has something for everybody. This is because of his easy skill in translating difficult things into simple terms that are familiar to all of us.

Reading his book, you *feel* what it's like to bank a plane, land it, or fly across country or around the world. This is a rare sensation indeed.

A Flier's World is in several sections. The first deals with flight in general—what makes an airplane fly?, how was aviation born and how has it grown?, what are the limits of speed and height? Then Langewiesche talks about the weather: what it is and where it comes from, whether it's friend or foe.

In a third section you accompany the author on a flight to India and sightsee with him across the Atlantic and over Africa. He is an excellent guide.

Finally, if he has not already done so, Langewiesche sells *you* on flying, in a section on light planes and private flying.

Considering that Langewiesche—who came here from Germany in 1929—speaks English only as an adopted tongue, his idiom, ready wit and insight are amazing. This is a book you'll want to read and re-read.

Lone and Level Sands

by Cornelius Vanderbilt Whitney
Farrar, Straus and Young, 314 pp., $4.00

The scion of a distinguished American family and himself a World War I flier, Cornelius Vanderbilt Whitney—in *Lone and Level Sands*—recounts his World War II experiences as an AAF combat intelligence officer. Most of the book is laid in North Africa during 1942-43 when, attached to the British 8th Army, Whitney watched the defeat of Rommel's vaunted "Afrika Korps" at El Alamein and the Allied push across Tunisia.

Whitney believes that three events—the battle of Alamein, the fight for Tunisia, and the air assault on Ploesti—sealed the fate of Germany. He points to North Africa as the first clear example of airpower in modern war. There, he says, airpower weakened enemy industries, attacked his line of communications, drove his air force from the skies, lent tactical support to our forces, and relentlessly hammered the enemy day and night.

Written in the present tense, a device probably calculated to lend an air of immediacy to the proceedings, the book is not *the* story of World War II. But it does chronicle the role Whitney played—in Africa and, earlier, in India and afterward, as an observer, on Iwo Jima.

There is the magic of history behind the names of Vanderbilt and Whitney. The author's brushes with the great and near great of the last war—among them MacArthur, Forrestal, Montgomery, and Marine General Holland ("Howland" to Whitney) Smith—make the book more significant than it would have been simply as an account of the vicissitudes of an American staff officer during the last war.

(Continued on page 64)

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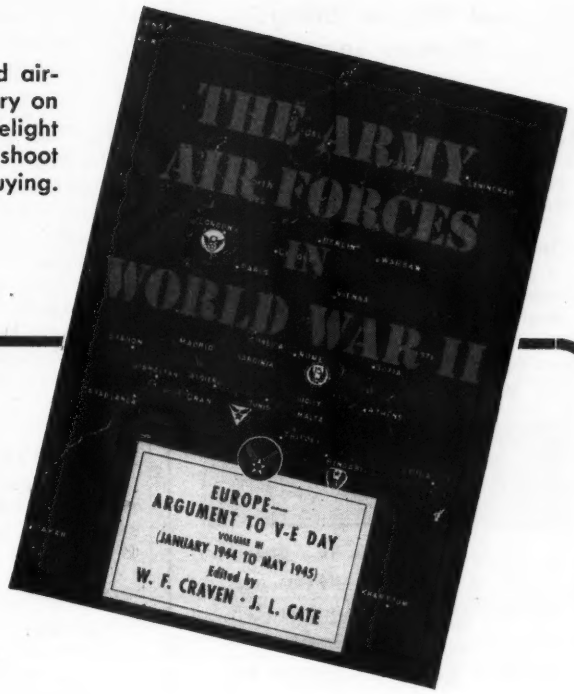
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Coward-McCann, 48 pp., $1.00

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Space Medicine

Edited by John P. Marbarger
The University of Illinois Press, 83 pp., $3.00 cloth, $2.00 paper

Space travel is fast moving out of the realm of science fiction. With the knowledge we have today, scientists say, we could send a rocket to the moon . . . or to Mars or Venus. But there are still major problems to be whipped, once a space ship has been built. The danger of the sun's rays, the lack of gravity in outer space, and the threat of meteors must all be met.

These and other problems are discussed in *Space Medicine* by a panel of scientists and doctors, from the point of view of the human factor. What will be the effect on the space pioneers, they ask, of no gravity? Will man be able to stand the tremendous acceleration necessary for a space ship to break out of the earth's gravitational field?

One part of this engrossing book discusses the possibility of a space station, shaped like a giant bicycle tire, 200 feet in diameter, lying on its side and revolving around the earth like another moon. From this platform, more than 1,000 miles up, where men would live as they now do in submarines, weather observations could be made, bombs dropped on any part of the earth, and other rockets refueled for trips further into space.

Space Medicine is no flight of fancy; it is a realistic treatment of a new and fascinating aspect of aviation medicine.

Capsule Reviews

ARCHITECTS OF AVIATION, by Maurice Holland; Duell, Sloan and Pearce, 214 pp., $4.00—the story of the lesser known pioneers of aviation: the men who developed the first wind tunnel, the science of aeronautics, and aerial photography.

CIVIL AIR REGULATIONS FOR PILOTS, 1951 edition; Aero Publishers, 136 pp., $1.50—combining the regulations required by CAA for pilot certification with a reference guide of government information about CAA exams.

CIVIL DEFENSE IN MODERN WAR, by Augustin M. Prentiss; McGraw-Hill, 429 pp., $6.00—a survey of the weapons that may play an important part in any major future war and a program for protecting civilian populations against atomic, bacterial, and chemical air attack.

DESIGN, CONSTRUCTION AND OPERATING PRINCIPLES OF ELECTROMAGNETS FOR ATTRACTING COPPER, ALUMINUM AND OTHER NON-FERROUS METALS, by Leonard R. Crow; Scientific Book Publishing Co., Vincennes, Ind., 38 pp.—a technical handbook.

ETERNAL STRANGER, by Lawrence Resner; Doubleday, 216 pp., $3.00—picturing the plight of Jews still living in Arab countries, not yet able to emigrate to Israel; one side of a contemporary problem.

MAN WAS MEANT TO BE FREE, by Harold E. Stassen; Doubleday, 460 pp., $3.50—the basic political beliefs of the three-time governor of Minnesota and now president of the University of Pennsylvania as revealed through his speeches, articles, and letters during the last decade.

AIR MAIL

CONTINUED

On page 109 under "Miscellaneous" the following information appears: "At Fort Monmouth, N.J.: entertainment and recreation, 10 weeks." This information is incorrect since the Army Special Services school is now located at Fort Benjamin Harrison, Ind. For further information concerning this school you should contact Mr. A. E. Casgrain, Information Branch, Special Services Division, Office of The Adjutant General, Washington 25, D.C.

Fort Monmouth, N.J., is a Signal Corps installation.

Maj. N. M. Young
Assistant Chief
Office of Technical Information
Department of the Army
Washington 25, D.C.

● *To the sharpeyed readers who found errors in our September issue our thanks and apologies. For the record, the Alaskan Command was not included in our USAF Command and Staff Chart because technically it is a joint command, reporting to the Joint Chiefs of Staff; Hensley AFB was not named for Lieutenant Colonel William Hensley but for his father, Major William N. Hensley; Lieutenant Oscar Monthan was killed in 1924, not in 1944; Major George P. Moody was killed in 1941, not in 1951; Captain Leland F. Norton was killed in 1918, not in 1944; Brigadier General Frederick W. Castle held the Congressional Medal of Honor at the time of his death in addition to the decoration listed.—The Editors.*

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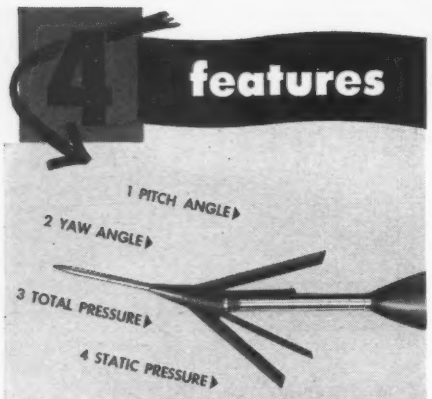

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OFFICERS WANTED

Aviation Cadet

Opportunities for commissions via the Aviation Cadet program are increasing, and the growth to 140 wings by 1954 should hike the requirement still more. Shortly after the start of the Korean war, Air Training Command began turning out new pilots at a 5,400 annual rate. And the FY 1952 pace is 7,200. Soon it may be 10,000. (Of the 65,400 rated officers expected in the Air Force in mid-1952, 52,400 will be pilots.)

New pilots come from three principal sources: civilian youths, active duty airmen, and non-rated officers who train in grade. (Newly commissioned ROTC, West Point, and Annapolis graduates compose the bulk of the latter group.) All pilot cadets train a full year—six months at a civilian "contract" basic training school and an equal period at a Training Command advanced school.

Although the pool of accepted pilot trainees, both civilians and active duty airmen, is large, and most currently qualified applicants will not begin training for many months, planning officials eyeing the 140-wing program want a large availability list. They need a healthy supply of qualified candidates ready for whatever may develop.

Hence, in a significant move last month, the eligibility requirements for cadet training were slackened—gently—and some applicants previously rejected were declared eligible. This was done by lowering the minimum Aircrew Classification Test Battery (stanine score) from six to five. Hopefuls who previously scored five have been told they now are qualified.

This perhaps forecasts additional training criteria reductions, such as a return to the high school diploma minimum to replace the present two years of college. Such a move already is in the wind for cadet observer training.

Used extensively during World War II, stanine scores are the result of written and psychomotor examinations given at special cadet testing sites. Marks run from a top of nine to a low of one, with high scoring applicants most likely to complete flying school successfully. Low scores invariably result in washouts, as thousands of tests have proved. Washout rates could increase under the new plan, but the Air Force feels that it will get enough well-qualified pilots to make the move pay off.

In spite of these developments, too few billets exist for all who want pilot wings. So the Air Force is working on an ambitious "Cadet Observer" program to take in all other aeronautical ratings. A partner in the Aviation Cadet framework, observer training recently was opened to airmen, civilians, and certain rated and non-rated officers. Successful completion means observer ratings, flight pay, a crew job with a bombardment, reconnaissance, or interceptor type aircraft, and (for other than officer trainees) second lieutenant commissions. The Air Force hasn't said how many new observers it needs, but the total probably will run high.

The observer program has two phases—basic and specialized. Cadets first enter the basic school at Ellington AFB, Tex., where they study elementary navigation, radar, meteorology, airmanship, aircraft instruments, maps and charts, and so on. Then they enter one of several specialized schools: B-36, B-47, B-50, B-26, and Reconnaissance at Mather AFB, Calif.; B-29, Radar Observer All-Weather Fighter, and Transport Navigator, Connally AFB, Tex.; Electronics Countermeasures, Keesler AFB, Miss.

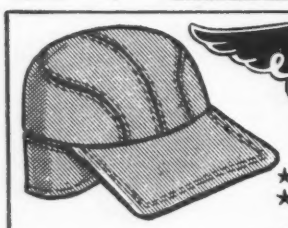
Advanced course lengths vary. Basic lasts 27 weeks and most students will train a full year. World War II bombardiers and navigators now rusty in their specialty and currently rated pilots also are eligible for observer training. Rated students receive only an abbreviated basic course.

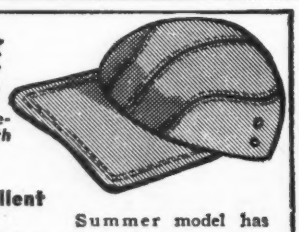
The observer program, which officials call "critical," has replaced navigator cadet training. (The latter in recent years provided only a handful of new navigators.) Aptness for mathematics and the physical sciences is helpful. Physical standards are the same as for pilot training except for less stringent visual requirements.

Observer training could become a major officer procurement program, since increased technological complexities of modern aircraft and a larger Air Force mean that more and more specialized observers and dual-rated officers will be needed. Present plans call for approxi-

(Continued on page 68)

FLIGHT KAP





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OFFICERS WANTED

CONTINUED

mately 13,000 officers with ratings other than pilot by June 30, 1952.

Officer Candidate School

Because the Air Force needs relatively few administrators, its OCS assembly line is geared to limited production. By World War II standards the output is tiny—323 enrolled in the new September class and the most recent quarterly graduating class produced only 273 officers. The current annual rate of about 1,200 will probably be expanded to 1,500 in the near future.

Male civilians no longer may enlist merely to attend OCS, quotas being reserved exclusively for active duty and component airmen and civilian women. Although the minimum educational requirement is a high school diploma, most recent candidates own baccalaureate degrees.

But OCS opportunities for women, both civilians and those in uniform, are excellent, in fact training officials are having a tough time filling the quota. Women applicants need only tally a composite score of 175 on the qualifying tests as against a 225 total for males. If they fail to make the grade, female civilian candidates may leave the service. Airmen (male and female) who wash out complete their enlistments.

Direct Commissions for WAFS

Direct commissions in the Women of the Air Force are the exception to the slim requirement for administrative officers. Mid-1952 WAF personnel requirements will be 49,871 officers and airmen, not 48,000 as released previously. Because it has more different types of jobs which women can fill (than has the Army or Navy), the WAF personnel target far exceeds that of other women's services.

According to late figures, the WAF corps in October was composed of 494 officers and 7,681 airmen. The officer goal alone is 3,891. Enlisted women and civilians between 24 and 32 are eligible for first and second lieutenant appointments. Prerequisites include a college degree plus business experience.

Direct Specialty Appointments

This unique new appointment program aims at filling specific vacancies in critical job fields. Active duty airmen and warrant officers, civilians, and inactive Reservists may apply. Some jobs are open to women.

During July, August, and September about 712 Reserve commissions were tendered under the program and many more are needed. For all appointments, applicants must furnish at least a college degree and some working experience.

Regular Commissions

Except for "Distinguished Cadets" (top AFROTC, Aviation Cadet, and OCS grads) who are offered Regular USAF commissions, most appointments are in the Air Force Reserve. Once on active duty, however, Reservists apply for permanent AF membership. The program integrates small groups into the Regular service every few months in the case of professional persons, once a year for others. Except for doctors, lawyers, etc., most must be under 30.

The most recent non-professional integration, early last summer, resulted in permanent rank for 297 of approximately 2,300 applicants. Regular second or first lieutenant commissions are awarded, but higher temporary rank is retained. (One Regular shavetail appointed last summer is an active duty bird colonel.)

In addition, the permanent ranks are swelled with graduates fr[illegible] West Point and Annapolis. This year, under the Defense Department agreement, 117 USMA and 178 Naval Academy graduates received Air Force commissions. Most of these are now at flying schools.

Air Force enlisted men may vie for West Point cadetships, either through Congressional appointments or under the special AF-Army enlisted quota (180 of the 2,496 Academy vacancies).

A special drive for 2,000 new nurses now is under way. Currently 2,700 nurses are in active Air Force service, but 4,700 are needed by mid-1952.

According to present build-up plans, the Air Force expects a military population by next June 30 of 1,061,000, composed of 136,000 officers and warrant officers and 925,000 airmen. Officer strength already has passed the 115,000 mark, all but about 23,000 of which are active duty Reserve officers.

The service can get mere numbers to meet the 1952, 95-wing target and the 1954, 140-wing organization, because the Volunteer Air Reserve officer pool still contains about 220,000 persons. But the majority of these are of World War II vintage and with rusty military skills. And the Defense Department wants to hold involuntary recalls to a minimum.

As a result, Air Force officer procurement efforts probably will continue to spotlight (1) college trained youths with a technical bent and (2) youngsters and oldsters who through education and training are prepared to step directly into a critical military job.

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VOL. 34, No. 12

DECEMBER 1951

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Active Members are men and women honorably discharged from military service who have been assigned or attached to the US Air Force or its predecessor services, or who are currently enrolled in the Air Force Reserve or Air National Guard. **Service Members** (non-voting, non-office holding) are men and women currently assigned or attached to the US Air Force. **Associates** (non-voting, non-office holding) are men and women not eligible for Active or Service Membership who have demonstrated an interest in furthering AFA's aims and purposes, or in proper development and maintenance of US airpower.

ITS OBJECTIVES

To preserve and foster the spirit of fellowship among former and present members of the Air Force.

To assist in obtaining and maintaining adequate airpower for national security and world peace.

To keep AFA members and the public at large abreast of developments in the field of aviation.

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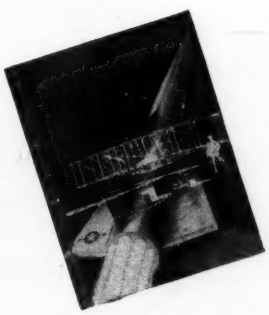

THE COVER

When the Wright Brothers were experimenting half a century ago, the prime stumbling block was the requirement that an aircraft be able to carry a man. Today the cycle has gone full circle. The problem is how to dispense with the pilot and make flight fully automatic. On how well we solve it depends the destiny of the Free World.

READ "The Kill Devil Story" page 11, and "The Four Freedoms of the Air Force" page 32

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What goes on up there?

Highest and fastest flight ever attained by any known rocket was that achieved by the "Wac Corporal" on February 25, 1949. The "Wac" was fired from a larger "bumper" rocket miles above the earth's surface. Structural design of the "bumper" and construction of the "Wac" were among the contributions made by Douglas. But designing and building such missiles is only part of the job. Gathering and computing data secured by test flights is also vital. One of the many examples of how Douglas is helping to pioneer this work is the new Automatic Data Analyzer. Developed for Army Ordnance this machine converts coded photographic recordings, such as radio-transmitted missile data, into a flow of interpreted information from instruments to the engineers. In this important field of research analysis and application, as in many other activities in the aircraft and related industries, Douglas continues to make significant advances. Douglas Aircraft Company, Inc.

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Air Mail

Training Aid

Gentlemen: For several years I have been a constant follower of AIR FORCE Magazine and have found it to be very reliable in reporting on developments and changes in USAF policies, etc. I am now back on active duty, as the Liaison NCO to this VART squadron.

One of my duties is writing a general "information sheet monthly." This is not an official Air Force publication, and it is distributed only to squadron members and to our Group Headquarters in Kansas City, Mo. The information contained in your magazine under "Airpower in the News" and "Mobilization News" is often referred verbally to the members of the squadrons at the unit meetings.

May I have your permission to extract items of particular interest for our information sheet?

M/Sgt. George W. Nixon
Hq., 9722d VART Sqdn.
Springfield, Mo.

• *Permission granted—The Editors.*

A Wife on Housing

Gentlemen: First may I say that as the wife of an airman, I very much enjoy your magazine. My husband says practically nothing about his daily routine (naturally) and AIR FORCE helps me to keep up-to-date with many matters, especially those that directly concern airmen's families.

The housing problem as detailed in the October issue was very interesting and I would like to add a few comments:

Like many other service folks, we live in a house trailer, and find that many bases do not yet have sufficient, if any, trailer space available. While in Washington, D. C., we had to find trailer space miles away from anywhere, since zoning laws in D. C. do not permit trailer parks in the city. (We were lucky enough to move on to Bolling Field Trailer Park and enjoyed our stay there —it is very well run by a committee of the men themselves.)

In Dayton, Ohio, the trailer park at Wright-Patterson Field (I can't remember which one) was small and could not accommodate very many, and I couldn't understand why someone didn't arrange for another large trailer park to be allotted space (there's so much of it all around!).

I know the trailer owners would be very glad to dig their own ditches and help lay sewage and drainage lines, etc. (we've done it in new trailer parks outside when paying much higher rentals!), and perhaps just the mention of this

(Continued on page 6)

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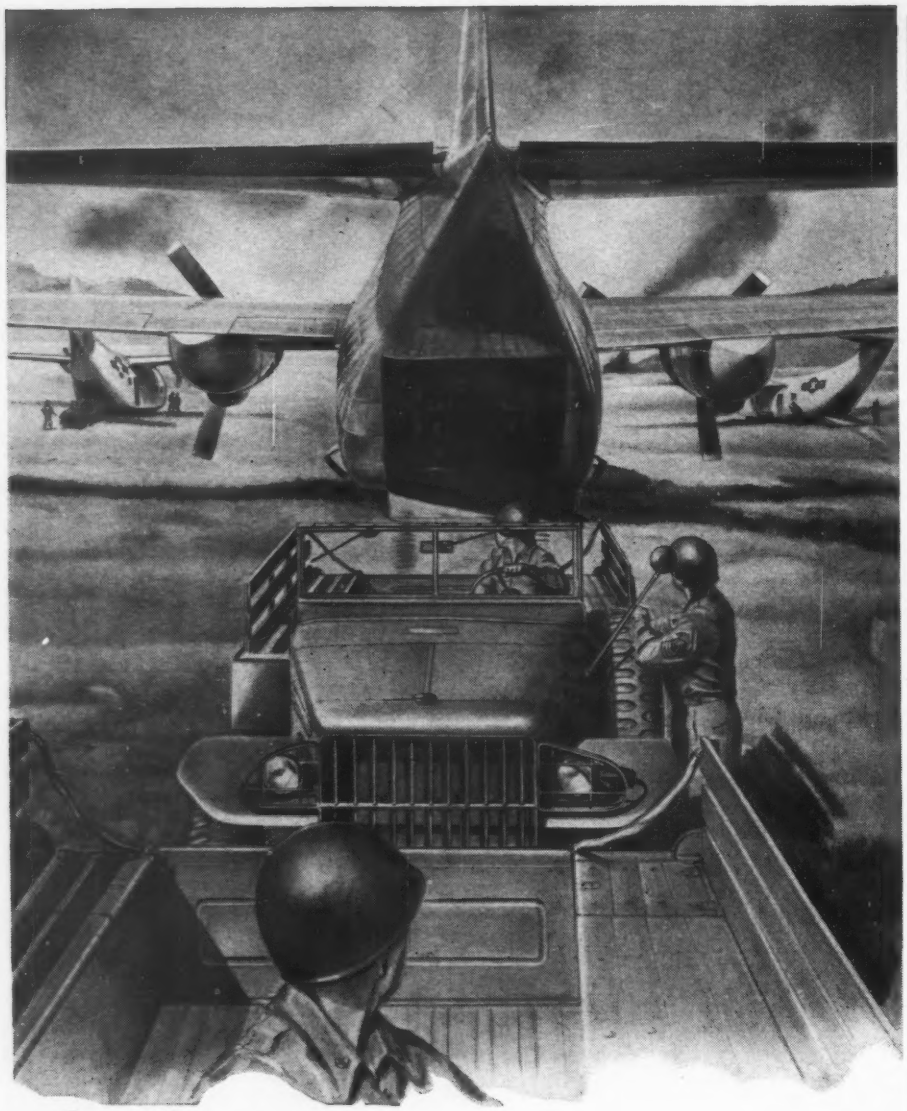

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from someone like yourselves would get some central committee busy arranging trailer parks at all air bases. Many more service people would buy their own trailers, I am sure, and it wouldn't cost the Government anything eventually as the cost of pipes, etc., would soon be paid for after a few months' rent had been collected.

At depots like Maywood, and Middletown, Pa. (the only other two bases I have been near in this country), there is no provision at all for trailers (and in fact at Maywood none for barracks, etc., either, so I imagine nothing could be done here—L. A. is rather a difficult place to arrange things like this!).

I have expressed myself very badly and in very rambling style, but perhaps from wading through you can make out the gist of my remarks and may be able to mention the matter where it will do the most good.

Mrs. John J. Fulton
Maywood, Calif.

Where's AFR 45-15?

Gentlemen: What personnel genius shelved AFR 45-15, based on education and military service, in favor of the dubious virtues contained in the OCS and AROTC programs?

AFR 45-15 at least read more sensibly than any other procurement method for officers, including our national service academies.

E. J. Carlin, Jr.
Philadelphia, Pa.

The 433d Replies

The following comments on the story "Help for Ike from Air Reserve" were passed along to us by author Bill Key —The Editors.

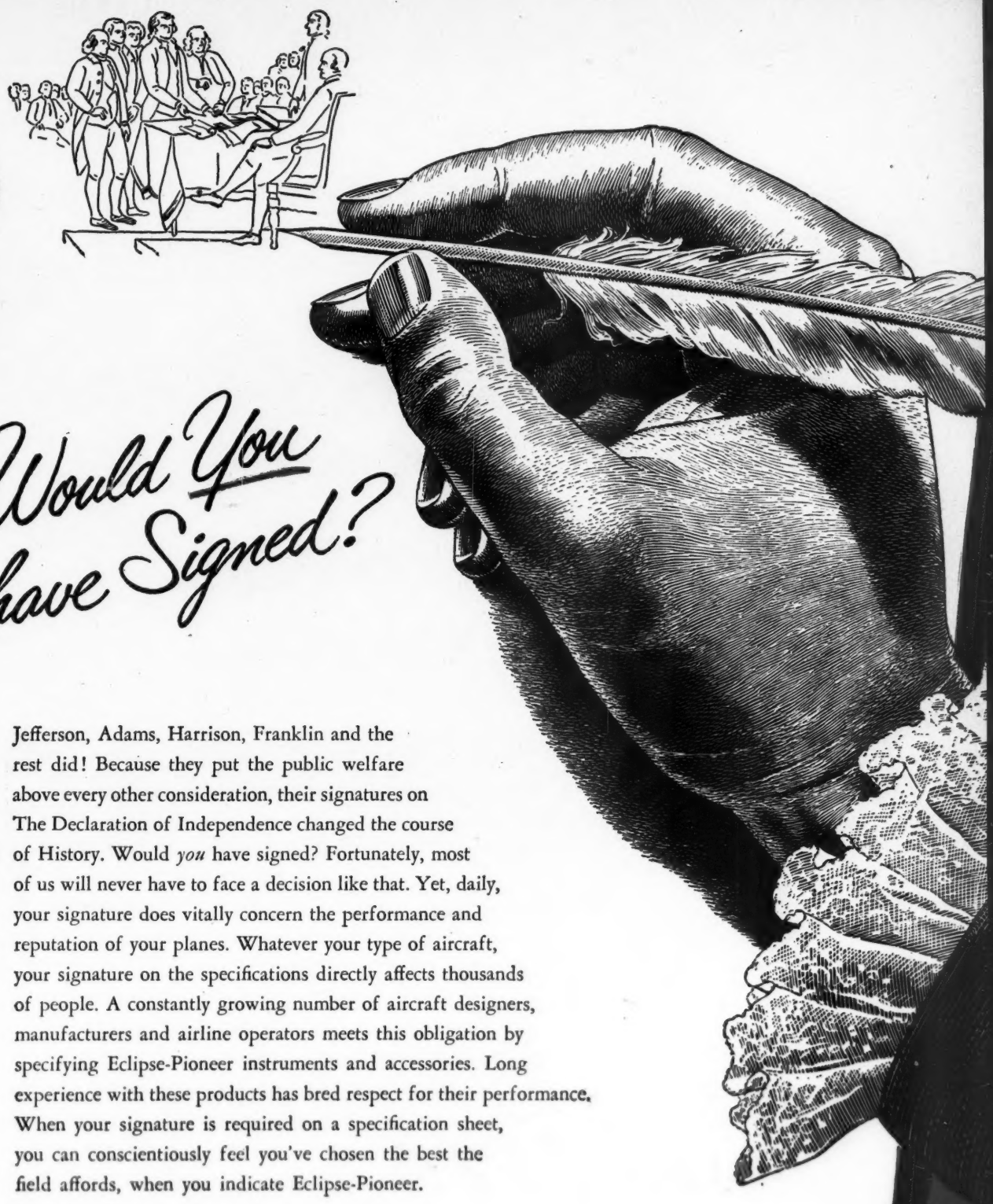
Dear Mr. Key: On behalf of all wing members, I want to express appreciation for the splendid article which you wrote for the October issue of AIR FORCE Magazine.

I have received numerous favorable comments from wing members about the big spread. I am certain that your excellent report on wing activities and problems will contribute to the *esprit de corps* of the wing.

A pat on the back from an outside source means a great deal to us. We know we have a good organization—but to have outsiders point this out is pleasantly encouraging.

Col. Harry W. Hopp
Commander, 433d Troop Carrier Wing (M)
APO 13, USAF

Dear Mr. Key: Lt. Colonel Boetcker stopped in my office yesterday with a copy of AIR FORCE Magazine and asked, "When will this publicity stop?" He was quite impressed with your article. Colonel Hopp was equally pleased with the story and many wing members commented on the excellence of your



Would You have Signed?

Jefferson, Adams, Harrison, Franklin and the rest did! Because they put the public welfare above every other consideration, their signatures on The Declaration of Independence changed the course of History. Would *you* have signed? Fortunately, most of us will never have to face a decision like that. Yet, daily, your signature does vitally concern the performance and reputation of your planes. Whatever your type of aircraft, your signature on the specifications directly affects thousands of people. A constantly growing number of aircraft designers, manufacturers and airline operators meets this obligation by specifying Eclipse-Pioneer instruments and accessories. Long experience with these products has bred respect for their performance. When your signature is required on a specification sheet, you can conscientiously feel you've chosen the best the field affords, when you indicate Eclipse-Pioneer.

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